

ITALY

Restructuring and
developing physical
potential and
promoting
innovation

Location

Carbonile

Programming period

2007 - 2013

Axis / Priority

Axis 1 – Improving the competitiveness of the agricultural and forestry sector

Measure

M124 - Cooperation for development of new products, processes and technologies in the agriculture and food sector and in the forestry sector

Funding (EUR)

Total budget 167 083
EAFRD 66 356
National/region. 84 454
Private 16 273

Project duration

2012 – 2014

Project promoter

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An olive oil mill enterprise in collaboration with a university, the regional chamber of commerce, machinery companies, and others, supported by RDP funding, established a partnership to test an innovative filtering prototype for olive oil production.

Summary

The O.L.C.A.S. mill enterprise a leading company in its area in olive oil production started a collaboration with the University of Florence and other research institutes and machinery enterprises in order to test and introduce an innovative filtering prototype for oil production, based on the results of a previous research project.



The filtering system prototype was installed in the O.L.C.A.S. mill and tested for a period of two years. With the collaboration of all members of the partnership, four different types of olive oil were used for testing using both the prototype and conventional filtering systems. The testing and analysis were useful to introduce possible modifications in the filtering system.

Results

Tests showed that all four samples (not filtered and filtered with three different systems) had similar content of water and not substantial differences in terms of chemical composition, such as level of acidity. However, the samples filtered with the prototype tend to keep the same flavour profile for longer.

The analysis also showed that samples filtered with the prototype can be better preserved when stored in conditions not ideal to avoid oxidation. This was an important finding in terms of maintaining the quality standards unchanged for longer periods.

The testing proved that the use of the prototype filters reduces the quantity of oil losses during the filtering process compared to the use of traditional filters.

Steel filters used in the tested new system can be used for twice the lifetime of traditional filters, therefore reducing the environmental impact due to their disposal and reducing also production costs.

Lessons & Recommendations

When implementing innovation projects that implies testing new production models, or new products or prototypes the possibility that some tests or parts of the projects are not completely successful has to be considered.

The experience of previous cooperation between the partners greatly affected their decision to work together again and most likely they will continue to do so in the future. In that sense, building upon common interests and well established linkages is a key factor for successful cooperation.

Context

During the last decades the perception of olive oil as a quality product, milestone of the Mediterranean diet, with important nutraceutical properties and positive effects on human health, has sensibly increased. Many research have been done to improve olive oil quality, but production costs to obtain a high level product are not always sustainable. Furthermore, by-products deriving from the oil production process are numerous and not easy to be disposed of. As olive oil is an important product in Tuscany, in terms of volumes of production and marketing, there was a high interest to innovate within its production process.

The O.L.C.A.S. mil enterprise located in the area of the Arno and Sieve hills, in the province of Florence, explored various possibilities to innovate in the sector and started its collaboration with the University of Florence and other research institutes and machinery enterprises. O.L.C.A.S. in close collaboration with many farmers in the area, implemented a first project under M124 aiming to test and introduce an innovative prototype for oil production, based on a three year research project the company had already participated in the past with the University of Florence (2005-2007). As a consequence, O.L.C.A.S. in collaboration with the farm Fattoria Altomena, which supplied olives, the company Toscana Enologica Mori di Tavernelle for the machinery, the Chamber of Commerce of Florence and the University of Florence, Department of Agriculture, Food and Forestry, prepared a second M124 project and applied for funding.

Objectives

Scope of the project was to analyse how the use of the filtering prototype, finalised in the previous 124 project in which O.L.C.A.S. had participated in (2010-2012), impacted on the quality of the oil produced. As already mentioned oil filtering is scarcely used in Tuscany, mainly because the traditional filtering system available in the market has paperboard filters that usually absorb not only water but also a certain quantity of oil that cannot be recuperated. In addition filters need to be replaced frequently and disposing of them is expensive.

Nevertheless, results of previous projects and studies showed that the filtering practices can in fact improve

quality and enabled to maintain it for longer periods.

Thus, the interest of beneficiaries was to test the filtering prototype and at the same time analyse the quality of oils not filtered and filtered with different methods, to understand what benefits this process could concretely ensure to the quality of the final product.

The second stage of the project aimed to introduce this innovative process in the local olive supply chain, provided that the results obtained by the first phase of analysis were positive.

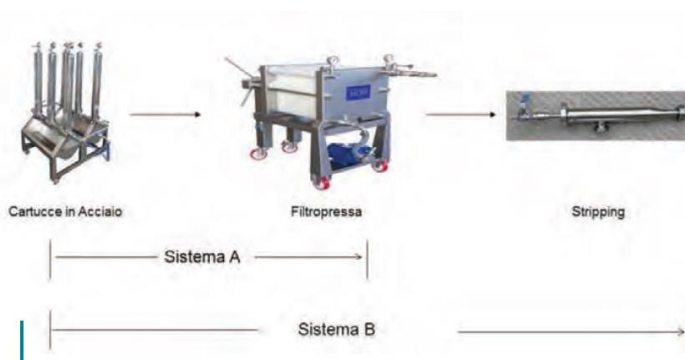
Once the prototype would be installed, the partner Fattoria Altomena provided olives to start the testing phase that was conducted by the University of Florence.

Activities

The filtering system prototype IVO was installed in the O.L.C.A.S. mill and tests were run for two years, 2012 and 2013. Particularly tests run in 2012 were useful to introduce possible modification in the filtering system.

The IVO prototype includes two sets of steel filters with different level of absorption capacity (system A). It could also include a nitrogen stripping system to eliminate the dissolved oxygen from oil (System B).

Test were run in 2012 and 2013 and four types of oils were obtained and analysed: oil not filtered, oil filtered with common filters oil filtered with both IVO filters (with and without the nitrogen stripping system).



Main Results

Results of test run in 2013 were of particular interest. First of all it was observed that all four samples (not filtered and filtered with three different systems) had similar content of water. In addition, not substantial differences were noticed in terms of chemical composition, such as level of acidity, between the different samples. An important difference on the other hand was noted in terms of flavour profile: samples filtered tend to keep the same flavour profile for longer. Being the persistence of the flavour profile an important element to value oil quality, this result was important to confirm the benefits of the filtering process.

Furthermore, samples were stored in conditions not ideal to avoid oxidation to verify possibly different reactions to the environment of oils filtered and not filtered. Also in this case, analyses showed that oils filtered were better preserved in terms of oxidation and acidity increase compared to samples of not filtered oil. This enables to maintain quality standards unchanged for longer periods.

Finally, it was also highlighted by the analysis that the use of the two IVO filters reduced the quantity of oil lost during the filtering process compared to the use of traditional filters. In addition, steel filters used in the IVO system can be used for a double longer period than traditional filters, reducing the environmental impact of their disposal and reducing also production costs.

The implementation of this project showed the importance of the filtering process in the production of high quality olive oil and the new system tested enabled to reduce environmental impact and production costs.

Key lessons

When implementing innovation projects that implies testing new production models, or new products or prototypes the possibility that some tests or parts of the projects are not completely successful has to be considered.

It is interesting to notice that the project partners had already cooperated in the past and probably they will continue in the future. The implementation of this project took advantage of synergies developed in the past, within the implementation of other projects, and created interest among other actors of the supply chain. An important result of it to be mentioned is also the creation of a partnership between a local retailer company, O.L.C.A.S. and at least three farmers to apply for support to implement an Integrated project to develop the olive oil short supply chain under 2014-2020 RDP.



Additional sources of information

n/a