Economic and Organisational Aspects of Olive Growing in Calabria.

Francesco Saverio NESCI , Massimo BALDARI, Maria Cristina DE SALVO
D*i*STA*f*A, *Università degli Studi* Mediterranea, Reggio Calabria
francesco.nesci@unirc.it, *massimo.baldari@unirc.it*, *cristina.desalvo@unirc.it*

The cultivation of olive trees in Calabria has its roots in antiquity and can be traced back to 3000 years BC, well before the settlement of Greek colonies in Sibari and Crotone. The Greeks however, take the credit for the organisation, expansion and diffusion of olive-growing not only in the flourishing colonies of the Ionian coast (Sibari, Crotone, Locri) and Tyrrhenian coast (Gioia Tauro, Rosarno, Oppido Mamertina) but throughout the entire Mediterranean area.

The activity of olive-growing is currently spread throughout the whole Calabrian territory and is most highly concentrated in the *Sibaritide* and *Lamentino* areas, around the *Piana di Gioia Tauro* and in the areas immediately behind it which provide a bowl-like frame leading towards the ridges of the mountain feet. A satellite view of Calabria highlights the region's highly irregular orography with its central, forest-covered Appenine ridge which either leads down to the narrow and frequently overbuilt strips of shore on the Ionian and Tyrrhenian coasts on either side of the region or acts as a natural amphitheatre to the few local flatlands. By examining how soil in the region is occupied, with specific regard to the olive tree, it is possible to observe how its cultivation develops around the inhabited area of Cosenza and, following the course of the river Crati, continues until the *Piana di Sibari* which it outlines climbing back up along the ridges of the Pollino on one side and heading down towards the Ionian coast on the other. The cultivar used (*Dolce di Rossano, Roggianella*, *Cassanese*) and the systems of cultivation employed, produce a high quality oil which has been recognised with the DOP award. In the Crotone area, olive trees – predominantly the *Carolea* cultivar – are concentrated in the area around Alto Marchesato, and their product has also received the DOP award. At the region's narrowest point where there is least distance between the two seas, olive trees are found on both coastal strips but are most highly concentrated towards the *Lamentino* area where they can be found as much in the inland areas as along the relief areas around the plain. The entire territory is characterised by flourishing agriculture and the oil produced from the *Carolea* has been rewarded with the DOP. Past the promontory of Mount Poro which divides the Catanzarese and Reggino provinces and absorbs the province of Vibo Valentia where olive trees are under-represented, is the *Piana di Gioia Tauro*. Here olive cultivation is characterised by the large size of the *Ottobratica* and *Sinoplese* plants; aesthetically pleasing and with a high level of productivity respect to the regional average but in terms of the oil produced require substantial interventions in order to reach even the minimum level of quality required for the prevalent lampante category. Continuing along the Ionian side, the cultivation of olive trees is evident throughout with *Carolea* predominant in the Catanzarese area and other varieties such as *Geracese* in the Reggino area. The above varieties are also characterised by their large dimensions but in these areas the typical lack of humidity and the techniques employed have lead to the production of oil for which the procedures for the recognition of quality have already been initiated.

The identification of clearly defined areas of production where the quality of the oil produced is closely linked to the systems of cultivation and harvesting, particularly in relation to the size of the plants, has lead to the surveying of a proportional number of structures, both traditional and intensive, in order to identify the results of management and the impact of individual phases on the total cost of the production operation in the two types of structure. From the separation and subsequent re-grouping of the received data, it has been possible to identify 3 different “olive cultivation systems” in the region, with reference to the type of oil produced (lampante or quality) and to the level of innovation used with the intensive structures. They may be described as follows:

- “Lampante system”: mainly concentrated in the *Piana di Gioa Tauro* (RC) but also found in many of the region’s marginal areas where structural and/or environmental conditions mean that techniques or strategies for the production of quality oil may not be employed. Plants are large and allowed to grow according to their natural shape, productivity is high and the olives are collected either from the ground once they have fallen naturally from the trees resulting in a large manual labour requirement or in a more efficient scenario using gathering nets spread out over the ground. The oil obtained is predominantly of the lampante category.
- “Traditional quality system”: found in areas traditionally employed in the specialised production of quality oil namely: the *Piana di Sant’Eufemia* (CZ), the *Piana di Sibari* (CS) the northern part of the Crotone province (*Alto Crotonese*). The three recipients of the DOP award present in Calabria (*Lamezia*, *Bruzio*, *Alto Crotonese*) are found here. Trees are often secular but cultivated following a rational trimming criteria. Olives are picked directly from the tree, often using specific “shaking” machines and gathering nets. The oil produced is mainly of the extra virgin type.
- “Innovative system for olive cultivation”: visible in all intensive agricultural areas, it has developed form the 1990s and relates to a high density model (300-400 trees/ ha) grown with imposed size limits, irrigated and considering an approximately 40-year investment cycle. Manual or mechanised systems harvest the olives directly from the trees and the quality of the oil produced is always extra virgin.

The methodology of the survey has provided for the gathering of data from 20 structures for each type of “system” in the most representative areas of the region and therefore the production cost per hectare and economic margins have been calculated from the difference between the GSP and the cost of production.

Following the gathering of management analysis data, 15 of the 20 olive groves defined as employing “innovative olive cultivation” were subjected to an evaluation of the cost-effectiveness of their construction through the analysis of financial costs and benefits (ACB) also referred to as analysis of the expected cash flow (DCFA). The selection of structures to examine was determined by the possibility of gathering reliable technical and economic data required for the analysis of the different structural phases, increases in production and consistent average production.

The analysis carried out has shown how olive cultivation in Calabria is often penalised by geographical, structural and organisational problems namely the irregular orography, extreme fracturing of businesses and a lack of inclination towards innovation, business, groups and networks. From the results of our research it is clear that in order to allow for the economic development of each structure the employment of modern and efficient techniques for their improvement is fundamental. Increased mechanisation - from the trimming to the harvesting phases – by adapting the tree to the machine and not vice-versa will result in the reduction of costs and improvement of quality and therefore an increase in deductible earnings.

The economic results of management identified in the research suggest that net margins are variable according to the type of olive cultivation examined: for the “lampante” system, margins are almost inexistent, in the “traditional quality” they are close to €2,000/ha and are higher still for new structures focussed on intensive olive cultivation which are desirable wherever orographic, economic and organisational conditions permit.

With regards to the financial evaluation of investments in structures for intensive olive cultivation, our analysis highlights the attractiveness of investments with an average NPV with specific reference to surface area as they remain positive despite the possibility of variation according to the various discount rates and price levels that have been considered.
From the models observed in relation to indicators of financial advantageousness with respect to different market prices, a base price of €3,50/kg for extra virgin olive oil can be set in order to make any financial investment attractive. With oil prices are above €4,00/kg, the IRR shows values which are higher than (or at least satisfactory compared to) current taxes or earned through alternative or competitive investments.

The results of the analysis carried out show that “choosing” to operate innovate structures in olive cultivation requires significant financial investment which only becomes economically acceptable in a context characterised by both vocational advantages of the production location and the possibility to compete in the marketplace through the recognition of the product’s value, requiring the definition and the initiation of a common strategy for the operators in each different stage of the production chain.

The situation regarding possible interventions for each structure becomes even more complex when taking into consideration all the phases of the production chain, characterised by a vast number of problems and where each product has its own specific market position and production process which may be improved through specific joined-up and separate actions. Quality extra virgin olive oil falls into this context as it allows good economic margins although it is useful to remember that this specific segment currently represents only a limited part of the complex Calabrian oil market.

Common objectives to pursue can therefore be defined as competitiveness, quality, technical innovation, concentration of the offer, improvement of perceived commercial value and whatever else required by the specific context as long as there is a common desire for the creation of business opportunities and exchanges rather than what may be traditionally defined as simple agricultural activity which is becoming increasingly obsolete and risks alienation from the market due to the increasingly strong competition at both national and international levels.