

# LA MEDITERRANEA VERSO IL 2030

Studi e ricerche sul patrimonio storico e sui paesaggi antropici,  
tra conservazione e rigenerazione



a cura di Marina Mistretta,  
Bruno Mussari, Adolfo Santini

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EXTRA

## Produzioni di pregio, tutela e recupero delle aree interne aspromontane: il ruolo del tartufo

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*Scopo di questo articolo è esaminare le potenzialità della produzione e del mercato del tartufo nell'area aspromontana. Attraverso interviste ad opinioni leader, operatori, raccoglitori, trasformatori, rivenditori e ristoratori, sono stati messi in luce i punti di forza e di debolezza del comparto, i rischi dell'ambiente esterno e le opportunità offerte dal sistema economico, nonché le necessità sollevate dagli operatori che a vario titolo si occupano di tartufo nella Regione Calabria. I risultati mostrano che i tartufi sono prodotti biologici naturali e che svolgono un ruolo importante nella gestione dei terreni boschivi: se sono presenti rappresentano un formidabile indicatore di salubrità ambientale. I risultati hanno evidenziato, altresì che la filiera del tartufo può contribuire alla promozione di strategie di crescita per la Calabria come indicato tra gli Obiettivi della Strategia Agenda 2030, Goal 11.a Sessione 1, punto 1, che punta alla conservazione, riqualificazione e promozione di aree disagiate o fragili con patrimoni culturali e ambientali qualitativamente significativi. Si è inoltre evidenziata la capacità del settore tartuficolo di attrarre nuovi flussi economici generati dalle attività di produzione, dal marketing territoriale, dal marketing del prodotto fresco o trasformato e dai servizi idonei a garantire reddito supplementare aggiuntivo per gli agricoltori e per gli operatori della filiera. I risultati hanno infine mostrato che l'uso dell'analisi SWOT in prodotti alimentari di nicchia fornisce indicazioni utili per le azioni di pianificazione dello sviluppo regionale, per le attività di marketing, per la promozione del turismo sostenibile, per il recupero e la valorizzazione dei fabbricati rurali e per i percorsi enogastronomici che ruotano intorno alla produzione di tartufi e alla gastronomia a base di tartufi freschi e/o trasformati.*

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# Quality Productions, Protection and Recovery of the Internal Areas of Aspromonte: the Role of Truffles

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## *Introduction and Literature Review*

Once inhabited for the almost exclusive production of wood, the woods are now recognized as bearers of a wide range of multiple-offer ecosystem services<sup>1</sup> of the forest and mountain farms, of food production, beauty and physical and economic well-being<sup>2</sup>. Most of the wooded areas of the Aspromonte, even if they are facing problems of depopulation and aging of the population, base their culture on traditional agricultural or forest lifestyles, favorable conditions for the activation of endogenous forms of development, allowing the protection and the enhancement of territories and communities. As has been well argued<sup>3</sup>, it is conceivable a development that is based “on a vision of

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1. COSTANZA *ET ALII* 2017.

2. Probably the most important contribution of the widespread recognition of ecosystem services is that it reframes the relationship between humans and the rest of nature. A better understanding of the role of ecosystem services emphasizes our natural assets as critical components of inclusive wealth, well-being, and sustainability. COSTANZA *ET ALII* 2017, p. 152.

3. OTERI 2019.

the territory as a set of places characterized by history, culture, traditions”<sup>4</sup>. According to this view, the concept of “chorally productive” is at the base of the possible processes of return to the territory intended as an ideal place for the establishment of regional systems of innovation alternative to the predominant ones of capitalist development. From this point of view, the production of truffles could play an important role, in line with the management of forest land, such as that of the Mediterranean area where their relevance is significant and wide-ranging<sup>5</sup>, allowing, at the same time, local development, land use planning, identity building<sup>6</sup> and enabling the activation of multiple skills, as is happening in Spain<sup>7</sup>.

This would open up to development processes within those that could represent the “permanent features of a given area, those, therefore, that persist despite the changes and on which the communities can set up a strategy of conscious development, is based on the system of relationships that historically defines that territory “allowing” to the rich baggage of cultural, material and immaterial heritage, that the internal areas of our country, despite the abandonment, still preserve and that can become important flywheels of innovation”<sup>8</sup>, in our opinion also identifiable in the use and management of wooded areas.

The development of profitable agro-forestry activities also opens up the possibility of the recovery of abandoned buildings and buildings on the territory that are in a state of deterioration, structures that were once at the service of agricultural or forestry activities and no longer maintained following the disappearance of the economic convenience of the same, but still memory of the use of the territory and of the past economic, social and cultural vivacity of the same. Also for these reasons it is desirable a multidisciplinary effort at the same time economic, architectural, social, cultural and geographical-environmental, aimed at investigating the interconnections between these aspects also in relation to the changes produced by modernity<sup>9</sup>.

4. The author underlines the peculiarity that these territories still retain strong development potential based on the practice of “making common” and on the non-competitive management and care of local resources and are therefore configured as a “kaleidoscope” of productive centers and daily life. OTERI 2019, p. 172.

5. DIETTE 2004.

6. TERVILLE *ET ALII* 2013.

7. BÜNTGEN *ET ALII* 2017.

8. OTERI 2019.

9. DE ROSSI 2018; OTERI 2019.

Truffles are edible hypogean mushrooms with a complex life cycle during which their mycelium establishes a symbiotic interaction with the roots of trees, especially oak, poplar, willow, hazel and sometimes shrubs. They are known throughout the world and considered a delicacy of high commercial value, characterized by a unique taste and a characteristic aroma deriving from a mixture of hundreds of volatile compounds<sup>10</sup>. Due to these particular characteristics, truffles are appreciated in international food markets, however, the truffle supply chain has raised controversial opinions: considered positive for rural economies and for the sustainable use of natural resources, it can be confusing and concern (information asymmetries, product counterfeiting, low quality and use of chemicals, etc.) due to the lack of clear consumer information, aspects that may represent the weakest link in the system, despite the popularity of the product in the whole world<sup>11</sup>.

On the European scene, Italy, together with France and Spain, occupies a prominent position in the production of truffles. Italian production is mainly concentrated in two areas: the first, located in central-northern Italy, includes regions: Marche, Tuscany, Umbria and Romagna and recently also Abruzzo and Molise; the second area, located in the northern part of the country, includes southern Piedmont and some areas of Lombardy<sup>12</sup>.

The truffle supply chain represents an interesting economic resource in the areas where these special forest products are present and in recent years interest in these fine mushrooms has increased both by those who have identified a profitable activity in the production and marketing of truffle plants both by farmers who want to enhance their land<sup>13</sup>.

### *The Truffle in the area of the Aspromonte and the pre-Aspromonte: Conditions of Settlement and Adaptability*

The Aspromonte Massif is made up of three distinct geological units, each of which is characterized by a precise geological history<sup>14</sup>. It is scientifically ascertained that any valuable truffle naturally lures

10. MELLO *ET ALII* 2006.

11. MARONE 2011; TSITSIPATI, ATHANASIOS 2014.

12. In the first area, production and market have their center in Acqualagna, an agricultural municipality at the center of an area where all types of truffles are present; in the second area, the market and collection center is located in Alba.

13. BRUN, MOSSO 2010; PAMPANINI *ET ALII* 2012; BRUN, MOSSO 2015; PENCARELLI *ET ALII* 2015.

14. This is the Madonna di Polsi Unit (at the base), the Aspromonte Unit (intermediate unit) and the Stilo Unit (upper unit). On the subject see CIRRINCIONE *ET ALII* 2016.

itself only in the presence of substrates with an alkaline or sub-alkaline reaction and when suitable climatic conditions are created. In the case of the massif of Aspromonte the areas of particular interest due to the natural presence of the truffle (and for its possible insertion with suitable forest mycorrhizalized species) are to be found in the foothill area that literally surrounds the Aspromonte mountain range.

The presence of almost all the fine truffles in this strip of sedimentary origin (from the *Tuber magnatum* Pico to the *Tuber Aestivum* Vittadini) is ascertained and documented. Unfortunately, these areas, over the centuries, are those that man has most exploited, sometimes in an uncontrolled manner, almost completely devastating the forest in favor of uncontrolled pasture and in favor of later abandoned crops. These are areas at great risk of fire and anthropic devastation but which in their intimate part offer small flaps that are still intact or sometimes reconstituted by man, opening up cues of rare beauty in addition to the presence of the precious truffle. The presence of the truffle in these areas is ascertained even if sporadic, as well as rare are the intact areas from the environmental point of view in this range.

For its part, the truffle is an exceptional environmental indicator and precisely this characteristic limits its presence. As soon as the delicate environmental balance in which it settles is altered, it disappears, dissolves. All species of truffles do not tolerate pollution of any kind, they do not tolerate chemical fertilizers, even minor alterations of pH and/or soil compaction, excessive work on the soil, the disappearance of the vegetation with which it is mycorrhized and the disappearance of the ancillary vegetation that protects it (comari plants). In the territory of pre-Aspromonte it is now certain that it is possible to operate on two different realities: protecting and expanding the existing truffle grounds respecting the existing truffle heritage and encouraging the creation of artificial truffle grounds. Truffles planted by man, in fact, artificially recreate the conditions existing in the areas in which the truffle is naturally established. And this because all the climatic, stational and economic conditions exist to start the creation of afforestations to dedicate to truffle farming in Aspromonte.

### *Aim of the Study and Methodology Adopted*

The study stems from the consideration that the development of a territory cannot be separated from its internal and marginal areas. The purpose of the work is to examine the potential of the *Tuber Melanosporum* (fresh and transformed) to promote enhancement pathways in the truffle supply chain of the Aspromonte area, in relation to the following possibilities:

- recover structures from the building heritage of the area which are largely abandoned or underused;
- stimulate agro-forestry entrepreneurship through artificial truffle planting;
- maintaining and enhancing productions coming from natural truffle grounds;
- activate multiple skills that revolve around them;
- promote low environmental impact tourism and food and wine tours with truffle inclusion.

It is, as is evident, to promote growth strategies for Calabria and to provide new tools for productive differentiation, employment and income for farmers in marginal areas otherwise destined for depopulation and degradation. Priorities that fall within the objectives of the Agenda 2030 Strategy and envisaged among the activities of the *Goal* 11.a (Session 1, point 1): studies and surveys for the conservation, requalification and promotion of disadvantaged or fragile areas with qualitatively significant cultural and environmental heritage.

It was decided to proceed with a SWOT analysis because the evaluation matrix of strengths (Strengths), weaknesses (Weaknesses), opportunities (Opportunities) and threats (Threats) is an analysis tool that allows to consider in a way overall market demand and potential demand (Kotler, 1997, Tsitsipati and Athanasios, 2014). Moreover, it allows to study the macro and micro environmental factors<sup>15</sup> that influence the market of a niche product.

Unlike traditional markets where marketing practices are used, niche markets are characterized by limited information, confusion with respect to quality standards and the absence of established institutions, markets that are rather difficult to decode and therefore to study. The truffle market has most of these characteristics; for this reason, SWOT Analysis is an appropriate research method for this study. The growing demand for truffles, together with their importance for the rural economy, led us to explore the suitability of the Calabrian truffle and the method was applied to thoroughly investigate and offer valuable information and strategic guidelines for managers and researchers.

Through interviews with leading opinions, operators, collectors, processors and restaurateurs, the potentialities present in the territory have been identified and the strengths and weaknesses of the sector have been highlighted, as well as the opportunities offered by the economic system and the needs raised by the operators who in various ways deal with truffles in the Calabria Region.

The analysis was performed on the local territorial system according to aspects and synergies that are closely connected and illustrated in figure 1. The interviews were conducted in the spring of 2019.

15. BECKEMAN-SKJÖLDEBRAND 2007; BIANCO, MARCIANÒ 2019.



Figure 1. Key aspects and synergies of the truffle supply chain in Calabria (author A. Nicolosi, 2019).

Identifying the areas suitable for the introduction of artificial truffle grounds and protecting the natural ones may represent a first step for the Calabria Region in the development of marginal areas, promotion of new activities and development of eco-sustainable gastronomic tourism linked to production and to the consumption of truffles, as well as to the activities of gastronomic artisan production based on truffles. Furthermore, it is also important that the forest and the territories involved are able to generate for the supply of ecosystem services in this case intended as a superposition of multiple supply - of the forest and mountain farms, to which the social use of forests confiscated from organized crime in order to promote virtuous processes of economic and social legality and to support Calabria in a path of sustainable development, solidarity economy, responsible tourism and ethical food production<sup>16</sup>.

## Results

Through the SWOT analysis we proceed with a systematic analysis of strengths, weaknesses, opportunities and threats. In the present study the method was adapted to the specific case of the truffle market in the survey area and the strengths, weaknesses, opportunities and risks were

16. DI GREGORIO ET ALII 2019.

determined by the people interviewed on the basis of a grid of questions prepared by the working group. Social attitudes and models are constantly evolving and emphasize the importance of the product's potential without neglecting the limits and risks present in the supply chain as shown in Table 1.

There are no official data on the actual quantity of truffles collected each year, especially in relation to the unofficial system of sales and negotiation of most of the collected production.

Truffle pickers carry out this activity for reasons of pleasure, interest in the forest environment, new gastronomic experiments and additional earnings. They use dogs trained for the identification of natural truffle grounds and are attentive to soil and truffle care. All the operators interviewed reported the interest that revolves around the sector which is perceived as very attractive in light of the economic crisis and offers opportunities for promising commercial activities.

However, consumer knowledge and experience levels are very low. Therefore promotional strategies must be designed in order to increase product awareness and stimulate the consumption and purchase of truffles and truffle-based products.

Starred Calabrian chefs make the products of the region's gastronomy famous and are at the top of international restaurants. The pleasure and the search for high-quality food, gastronomic excellence, landscape and well-being moves the economies of the territories, pushing and promoting dialogue and the aggregation of skills, of mastery. Furthermore, retailers consider it very important to inform consumers about the possible ways of cooking truffles, also in order to buy them and prepare them at home alone<sup>17</sup>.

All the participants who were interviewed during this study (collectors, producers, retailers, distributors, chefs, restaurateurs and consumers) indicated that truffles are a promising and constantly growing commercial activity. Discussions with professionals indicated that there would be no problems in selling the products in the supply chain, as long as the truffles are of good quality.

### *Final Considerations*

The analysis carried out so far has allowed us to highlight the potential of the sector but also the needs on which to intervene in order to guide the actions of protection, promotion and enhancement.

The truffle could allow, in degraded and negatively populated areas, the recovery and reconstitution of forests in areas where these no longer exist with undoubted environmental, landscape, vegetation

17. REYNOLDS-ZAYAK 2004.



| <b>Strengths. Territorial heritage, subjects and companies involved</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Weaknesses. Difficulties of the local economic system</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>- Historical, cultural, archaeological and architectural heritage of the Aspromonte and pre-Aspromonte areas</li> <li>- Forest / environmental and potentially productive heritage for truffles (presence of calcareous soils highly suited to the cultivation of truffles)</li> <li>- Calabrian food and wine heritage and importance of the truffle production chain</li> <li>- Reforestation of agricultural land and productive use of private forests</li> <li>- Social use and return to the community of forests confiscated from the 'ndrangheta for artificial plants or for the maintenance / recovery / improvement of existing natural truffle grounds</li> </ul> | <ul style="list-style-type: none"> <li>- Lack of infrastructure and services adapted to entrepreneurial needs</li> <li>- Presence of organized crime (threat and intimidation risk)</li> <li>- Poor awareness of the potential of the territory (in terms of environmental / productive capital, human capital, social capital)</li> <li>- Absence of a certification mark and little possibility of recognizing the origin of the truffle</li> <li>- Poor specialization of processing companies</li> </ul> |
| <b>Opportunities. Development and growth of the territory (proceeds)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Threats. External environment threats</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>- Increase in employment and growth in the proceed sector (consolidation of activities linked to nurseries, production, collection, distribution and consumption of truffles)</li> <li>- New business activities for cultivation development</li> <li>- Development of tourism with low environmental impact and enogastronomic tourist itineraries with the inclusion of truffles (a product of value and excellence)</li> <li>- Increase in forest surfaces and related valuable productions</li> <li>- Possibility of using European funds and regional funds</li> </ul>                                                                                                   | <ul style="list-style-type: none"> <li>- Scarce information and knowledge of Calabrian truffle production by farmers and consumers</li> <li>- Centralization of production in the hands of a few traders</li> <li>- Not adequate attention of regional policy and local administrations to the contribution that truffle farming can give to the entire economic-territorial system</li> <li>- Dissemination of improvised and not very competent pickers</li> <li>- Absence of control bodies</li> </ul>    |

Table 1. SWOT analysis of the truffle supply chain in the Aspromonte and in pre-Aspromonte areas (author A. Nicolosi, 2019).

advantages and with the creation of carbon sinks areas (afforestation with forest essences of various artificially mycorrhized and certified species). It is a question of finding the right balance between those who push for an absolute defense of the forest and those who believe in the sustainable use of forest resources, this is an issue that is still open and the experts complain about the need to adapt the legislation forestry to allow the management of natural truffle grounds<sup>18</sup>.

As is evident, the maintenance of forestry activities would facilitate the recovery of a large number of old rural buildings, even earmarking them for tourist or artisan use linked to truffles. They are also

18. The general rules and the forest police are too restrictive, and do not allow the use of cultivation techniques to maintain or increase the production of truffles, such as the reduction of the matricoli per hectare to be released after cutting the coppice, or the need to carry out working of the land with mechanical means, or the contribution of active limestone. On the subject, see MIPAAF (2018), National Plan of the Truffle Supply Chain 2017-2020, Synthesis Document.

products that cover a large area of the year, allowing a long and diversified use; this would allow tourists to be welcomed almost all year round, while currently presences in the Region are strictly related to the summer period and the main religious holidays, also stimulating an improvement of the image linked to food and wine and to the typical products of the Aspromonte area, to equal to all the other regions historically dedicated to the cultivation of truffles.

With reference to the artificial truffle grounds, all the climatic, ecosystematical and economic conditions exist to start the creation of afforestation to be dedicated to the truffle growing in Aspromonte (soil suitable for the planting of mycorrhizal plants, presence of surface and ground water that optimizes and stabilizes the production, in almost all potential sites, the possibility of financing the afforestation interventions through the forestry measures of the RDP Calabria, encouraging farmers). Precisely this last condition is not of minor importance, especially in a territory often pointed out due to the low propensity to use the economic resources made available to the European Union for these areas. However, what is important is that the awareness of agricultural entrepreneurs passes through the category organizations, as it is crucial that agricultural entrepreneurs are supported by experts and mycologists in the choice and in the good technical agronomic practices to be followed for the success of the plants<sup>19</sup>.

19. BRUN, MOSSO 2016.

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