



Le scienze merceologiche nell'era 4.0

a cura di

Benedetta Esposito, Ornella Malandrino,
Maria Rosaria Sessa, Daniela Sica

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59. A BIO-DISTRICT FOR CIRCULAR ECONOMY

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Abstract

In recent years, organic farming has become a consolidated reality worldwide thanks to a constant growth rate of dedicated areas and farms operating in the organic model. Italy is one of the leading countries in this sector, where sustainable rural development based on organic districts, that is the organization of large areas dedicated to organic production with an adoption of network policies, generates economies of scale capable of being more competitive than conventional agriculture, reviving the primary sector. The Bio-district is a phenomenon that has been born in the last ten years in Italy. To verify the potential of this model in the sustainable development of a territory, was taken into consideration the Etruscan Roman Bio-district. The analysis used BS 8001:2017 to identify the enabling factors in a *circular* key. The study included a first phase of literature review. Identified the key factors of the Bio-district, have been conducted exploratory investigations in order to verify the state of the art and the possible scenarios for the constitution of a reference model based on the principles of the circular economy.

Keywords: Bio-district, circular economy, business model

Introduction

The districts involved in an element that qualifies the Italian productive fabric, described by aggregation phenomena, difficult to define or replicable, within an economic dimension (Ruggieri, Poponi, & Cerica, 2007). The vast literature has contributed to explaining and highlighting the limits and success factors of a production system that is locally concentrated, with strong interdependence between individual production units and a well-defined sociocultural connotation (Beccatini, 1979, 1998, 2000; Fortis, 1996; Fortis &

Carminati, 2007; Fortis & Quadrio Curzio, 2007; Pyke, Beccatini, & Sengeberger, 1990).

Alongside these forms, a new development framework is emerging in Italy, that is the Bio-district, that uses the organic model in production and consumption.

In recent decades, organic farming has been steadily increasing worldwide. The growth rates have favoured its diffusion, enabling it to quickly become one of the most influential primary production areas, and supporting a more widespread model of sustainable agriculture globally.

In Italy in 2017, cultivated areas exceeded the value of 1.9 million hectares, with a increase of 15% in the utilised agricultural area (UAA) for organic farming. The sector operators have exceeded the 75.000 units (SINAB, 2017). The field generates approximately 2,5 billion euros if considered the various fields of distribution (from Large-scale systems (LSS) to traditional markets, according with SINAB (2017)).

The concentration of areas exclusively dedicated to organic farming and the consequent production specialization has found formal recognition in the constitution of organic districts. It makes Italy one of the top ten countries in the world for organic production.

The first attempt to insert in the draft Legislative Decree for the reorganization of the organic sector dates back to 2004. it will find its first formalization in 2007, in the discussion on the draft law on Organic Agriculture. In particular, the article 7 is devoted to the definition and purpose of this subject, that is recognized in the law of 4 February 2009 (Franco, S., Pancino, 2015).

The First Italian bio-district was established in the Campania Region in 2009. From this time, many initiatives have characterized and influenced the legal recognition or the voluntary aggregation, with respect to this phenomenon.

Nevertheless, there is still difficulty to identify a Bio-district and associate it to a precise district typology. This has led the literature to consider it a hybrid form (Pugliese, Antonelli, & Basile, 2016) that delegates to the Regions the task of formalizing its classification and constitution.

There are not many authors who in literature have focused on the analysis of these spatial concentration (Basile & Cuoco, 2012; Clemente, G.F., Pugliese, L., Valentini, 2013; Favilli, Hycent, & Barabanova, 2018; Franco, S., Pancino, 2015; Monarca, 2009; Pugliese, Antonelli, & Basile, 2015; Pugliese et al., 2016; Toccaceli, 2012, 2015, 2018). Focused studies discuss nature and aim about these entities, on the development dynamics and on the benefits of its establishment, as shown in Tab.1.

The present work contributes to the discussion of the role that the organic districts are assuming in the National and Regional production context, in Italy. In particular, the study focuses on the analysis of the Etruscan Roman Bio-district, located in the Lazio Region, and on the realization of a first reference model for the application of the principles of Circular Economy.

Tab. 1 – Contexts analysed in the Bio-district literature.

Context	Authors
Regulations	(Toccaceli, 2012), (Toccaceli, 2015), (Toccaceli, 2018)
Identification of requirements (Classification)	(Monarca, 2009), (Franco, S., Pancino, 2015)
Model of Governance	(Favilli et al., 2018)
Case study	(Basile & Cuoco, 2012), (Pugliese et al., 2015)
Advantages	(Clemente, G.F., Pugliese, L., Valentini, 2013)
Census	(Pugliese et al., 2016)

Source: Author's elaboration

1. Methodology

This work aims to contribute to the analysis of the Roman Etruscan Bio-district of the Fiumicino and Cerveteri area, in the application of a first reference model for the Circular Economy (CE).

At a methodological level, the study adopts a qualitative-quantitative research approach based on the descriptive protocol defined by Yin (Yin, 2009) and supported by semi-structured interviews (Corbetta, 1999).

This is an exploratory study that focuses on the analysis of the development context of the Etruscan Roman Bio-district to understand the competitive dynamics that can be activated, compared to the new BS 8001:2017 standard. Based on defined critical success factors, suggested by the standard, a multiple comparative analysis of a selected sample of the main players in the Bio-district was carried out to verify the state of the art of organic production and to define a reference model for the CE application.

2. Discussion

Research has enabled data to be collected on crops, farming, the processing and marketing of organic products in the Etruscan Roman Bio-

district. The companies identified for the analysis cover an area of about one thousand hectares and have an average annual turnover of 4.5 million euros, with about 70 employees. For each production chain, a survey was carried out on the production (and quantities) as well as the consumption of energy resources, renewable and non-renewable, and water resources. In addition, consideration was given to the type and quantity of waste produced (where measurable).

The context that appears from the analysis of the acquired data is heterogeneous. At the same time, it is extremely significant and suitable to represent a favourable situation for the development of the Bio-district in a circular key.

The analysis shows three main production chain: agriculture, meat and wine and a category (“other activities”) devoted to the processing activities of primary.

From an analysis of the nature of the activities carried out, it allowed to reconstruct the product flow of the production chains, with the exclusion of the data relating to the cereal production (table 2).

Tab. 2 – Quantity per single product sold for customer types, forage exclusion (tons).

Product category	Farmhouse	Home delivery- Farmer's market	LSS	Health food store	Collective Catering	Direct selling	Total
Fruit and vegetables	56,75	70,2	14,04	32,76	234	122,75	530,5
Meat	13,95			7		9,45	30,4
Wine	200		40			160	400
Cheese		3		3			6
Ice-cream		0,6					0,6
Oil	5,5					10	15,5
<i>Total</i>	<i>276,2</i>	<i>73,8</i>	<i>54,04</i>	<i>42,76</i>	<i>234</i>	<i>302,2</i>	<i>983</i>

Source: Author's elaboration on interviews data

The data about the flow of food product shows the existence of a structured short supply chain. For a long time, the typology of this distribution has been put in crisis not only by a change in the consumer's purchasing preferences, but also by the evolution of the food industry and by strengthening aggressive policy of sales (Ismea, 2017). In fact, the data concerning the distribution of the agri-food products of the Bio-district shows a new context, which does not count only on the short sales channels, characterized by the Farmer markets (Hamilton, 2002) and from an integrated structure with the accommodation system of the farms, the collective catering, the

local Purchasing Groups and from new services (for this context), such as home delivery.

The aggregate analysis of the data highlight the high share of the product is intended for direct selling through shop located on farms, or through local Purchasing Groups or Farmer's market (31%). The use of new technologies is not yet integrated in the sales processes but can be traced back to a simple operational management of orders. The home delivery is a characteristic service connected to the perishable goods, such as fruit, vegetables, cheese or to the cold chain, like the ice cream. The share distributed through these sales channels stands around 8% of the total production.

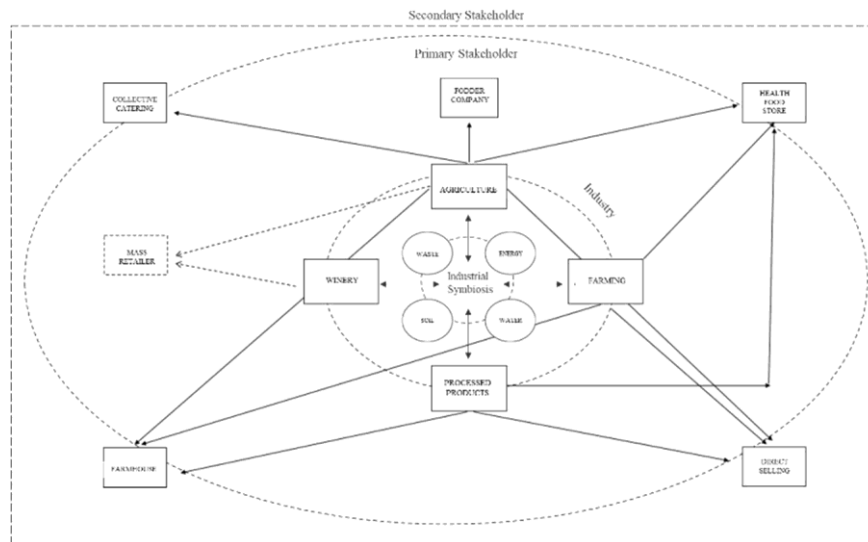
The farmhouse is an important channel for the sale of production, with a share that absorbs, approximately 28% of the total production. It is crucial tool to sell the production, to enhance the value of processed products, and to activate further channels of contact with the customer.

Collective catering receives about 24% of the total production. In this category are considered biological dining hall (public and private) and hospital cafeteria (private clinics). The sale at health food store is residual (4%), as the one using the LSS (5%).

3. Reference model

The above data, considering the aspects that led to the creation of the Bio-district, highlight the potential of the system to enhance the product through the use of the short supply chain and business diversification. This allows companies to get out of the traditional sales channels and activate communication and trust channels with the consumer. These values can be easily transferred to customers, through a process of strengthening the local identity, which can be promoted, for example, through the creation of a Bio-district Label. Therefore, agriculture, farming, can take on a priority role in defining strategies for local / territorial development. Also, the companies that decide to join the district, accepting the values and the production/ distribution model, will benefit from the positive effects generated.

Graf. 4 – Primary Stakeholder and Secondary Stakeholder Etruscan Roman Bio-district.



Source: Author's elaboration

Qualitative analysis shows that firms are inclined to change towards CE principles. This is read in terms of opportunities, to enhance the productive resources and reduce the company costs, as well as the possibility to orient the internal productions to a sustainable development.

The model that emerges from the Bio-district analysis highlights three scenarios.

The first scenario is related to the context of secondary stakeholders. This aspect has a priority during the recognition of the legal entity to be entrusted with the political and administrative guidance of Bio-district; the definition of the development policies; the articulation of the modalities of participation and involvement of new companies. The positioning and the offer of the operators involved in the study favours the creation of a strong image of the district. It is able to guarantee the spatial concentration in the territory of the companies, and to give them a new role in the management of the development policy: with respect the product recognition and reliability (brand identity), and the certification systems or trace back of the productions.

The second concerns the interactions between the primary stakeholders. The productions that characterize the Bio-district, that are agriculture, live-stock farming, and wine industry have shown how a vertical integration overcome, in virtuous way, the criticalities of an industry, which are mainly linked to the profitability of production. Obviously not all operators, present

or potential, have this ability. The role of the Bio-district becomes a catalyst for the inter-organizational exchanges for the valorisation of short supply chains (horizontal) and a stimuli for the receptivity industry (considering the weight of the destination flow of the products) (Table 1).

The last scenario refers the ability to activate a Circular business model, arising from the inter-organizational exchanges of resources. Currently the reuse of waste takes place on low-value segments, but there is a need to intervene on complex cycles, capable of exploiting the waste from agriculture (waste, leaves, slices), from wine (rasps, pomace) and those for farming (wastewater, bones).

The model highlights the exchanges that can be activated between industry and natural resources, energy, water and soil, and from the waste system. In literature (see i.g Chertow, 2000, 2007), the concept of inter-organizational exchanges is used to describe a form of cooperation between different business organisations. In this first model this is replicated. The mutual collaboration takes place with the exchange of resources, implementing a series of initiatives aimed at activating a plurality of circular processes, and to establish a symbiotic relationship between enterprises. This allows to intervene for the creation of integrated supply chains of primary and secondary products.

Consequently, the possibility to intervene on the exchange of resources of less value, from the unsold, edible and inedible product, to what remains on the field that is not harvested because not convenient. The interaction between agricultural and livestock sectors helps to activate this type of exchange but requires upstream coordination so that the needs of operators can be intercepted and stimulated.

Conclusion

The analysis carried out within the Etruscan Roman Bio-district represents a first exploratory study on the potential of the Bio-district regarding the ability to activate the principles of the CE. The analysis context, although heterogeneous, highlights the potential for expansion linked to an integrated short supply chain through three scenarios, identified above. It is able to overcome the critical issues of managing relations with the LSS, offering innovative services and enhance inter-organizational exchanges.

The analysis paves a range of future analyses that can be conducted within the Bio-district and a number of policy and research implications, on regards regulatory aspects, the recovery of by-products, the ability to reduce impacts

from waste recovery, the use of renewable energies and good soil management.

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