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Mapping and assessing urban agriculture in Rome

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Abstract

The paper focus on the concept of food and agriculture as an infrastructure – which is both spatial and relational - , within the context of the urban Mediterranean phenomenon, where, with all its political, cultural, economical, social and environmental differences, there is a common relationship with food and food production in an urban setting. The aim of this paper is to explore the agricultural context of Rome, focusing on its relationships with development in the metropolitan area, within the framework of sustainable food planning. Starting from the relationship between food and city, we have mapped the foodscape, identifying a number of representative conditions - typologies - in the metropolitan area of Rome. Through a of criteria - relationships with the urban fabric, production patterns, flows, services, infrastructures, environmental characters, social behaviour linked with the production - the study tries to summarise Roman agriculture. We focus on a set of recurring elements, involving both criticalities and opportunities, that bring together city and food production.

Rome has what we could call a compact structure compared to the dispersed urban model and this has encouraged the development of local agricultural systems, where both flows and landscapes involve the city. While production is organised into wedge-shaped areas, the places where exchanges occur are mainly within the municipal area of Rome, with the exception of farms involved in direct sales. Despite a strong urbanization pressure caused a reduction of 42% of the utilised agricultural area (UAA) between 1990 and 2000, this trend was reverted back between 2000 and 2010, with an increase of the UAA of 14%. The analysis of land use (CLC, 2006) reveals a system of wedge-shaped agricultural areas, where short supply chain models can be used efficiently to manage and promote the use of land and landscape. In synthesis, in terms of their production systems, there is a high number of short supply chain farms in Rome (over 40%), mostly with mixed production systems linked to multifunctional farming.

The role played by the local food network in Rome is remarkable, particularly in case of farmers' market, SPG' and those linked to box schemes experiences have seen significant success. The increasing importance of Alternative and Local Food Networks is showed in the data: the 60% of Rome municipalities farms sell directly (Istat, 2010) it was registered an increase of + 57% Farmers' market at municipality level and of + 64% in Rome's province (2010/13) (Marino et al., 2013). The local food network

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behind agriculture in the city, within a number of integrated social agrarian cooperative, who represented an alternative food production system and landmark for many initiatives carried out by the civil society, associations, cooperatives, volunteer and school sectors, community supported agriculture (CSA) initiatives. This account of short supply chains in Rome is inevitably the account of an urban phenomenon. It is indeed the city that determines its special characteristics for both physical and relational aspects. The mapped farms are mostly located near the main routes that radiate from the city to the countryside, underlining the centrality of the flow of exchanges that take place with the city.
The processes of transformation affecting the primary sector in urban and suburban environments reflect an agriculture that forms (and produces) new landscape and functions, typically reconnected to the historical value of agriculture in and around the Mediterranean cities. Food, because of its cultural and historical place in Mediterranean tradition, has a significant role in configuring the areas where exchanges takes place, which are, therefore, specific places for meeting and forming relationships within the public spaces of a city. The system identified by the paper configures the set of all the different forms of agriculture and food in Rome as a device of resilience for the city, made up of places where flows, relationships and processes become increasingly more sustainable, and where both physical and intangible spaces act as an infrastructure in their exchange with the city.

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Keywords: Rome, Food Planning, Urban agriculture.

1. Introduction

In recent years, there has been much talk about how the population of cities has overtaken that of rural areas, crossing an unprecedented watershed. Indeed, the new “urban era” or “metropolitan era” was announced with some emphasis. The form it takes in Rome is archetypical, make it impossible to interpret or understand the urbanisation processes without also looking at the significance of rural-urban relationships (Zimmermann, 1996).

Referring to the Mediterranean geography, Braudel stated the cities do not originate from the countryside, but rather it is the countryside that originates from a city that it is barely capable of feeding. “The countryside lived off its harvest and cities off the surplus”, he writes (Braudel, 1987). The territorial dynamics of the Mediterranean landscape, even after nearly half a century, are still those described by the author, and indeed it is these settlement models that largely define the forms and processes of the farming and environmental systems to which they belong. However, the modern urban phenomenon in part negates the traditional idea of a city where the countryside has a place outside the “walls”, and whose forms and functions are nearly in conflict with those of the city. Through a disorderly process, cities are rewriting the way in which they relate to the territory, a process that must inevitably lead to the invention of different cities. This multi-faceted aspect also emerges in the many forms assumed by the primary sector in the stretches of land nearest to the city, leading to functions relating to space and relationships that vary according to their socio-economical and environmental implications. An analytic effort is required, downstream from the interpretation and characterisation of these relationships, to identify the possible intervention tools that can assess their complexity. Rural economy, at least until the late 1950s, was strongly agricultural in nature, to the point that the terms “agricultural” and “rural” could be used indifferently. Today, this synonymy is lost, due to the growing diversification of rural economy, although agriculture still retains its role of defining the territory in terms of landscape, traditions and culture. On the other hand, the processes of transformation affecting the primary sector in urban and suburban environments reflect an agriculture that, where it survives the pressure from encroaching urban settlement, forms (and produces) new forms and functions. Through diversification, various initiatives and sell on farm experiences, the structure on which production is based tries to satisfy an urban demand that is no longer exclusively that of food, but is also directed towards social and environmental needs, with significant benefits in terms of employment, added value and the role of education and culture. Alongside the transformations to the farming environment, further changes also affect, in particular, the “green” urban or metropolitan landscape. New trends emerge in the use of free cultivated spaces - public and/or private land in urban and suburban areas - that acquire a new civic dimension linked to modern-day living (Baycan-Levent et al., 2009;

Barthel et al., 2013). The pathways in development that preceded the agricultural revolution have been re-invented, and market gardening and arboriculture are a feature of the suburban fringe of many Italian cities.

Starting from the observation of this phenomenon, our work aims at interpreting the context of Rome through factors that outline and define the relationship between city and countryside, focusing in particular on the Mediterranean setting, with the aim of proposing a taxonomy of the types of farming developing within the Roman environment. Our intention is to identify criteria that can translate farming models relating to function and space into specific processes, on a metropolitan scale.

The paper is organized as follows. In the next section, we outline some of the major features of the changing rural urban relationship and the reasons why a need for a focus on the primary sector within a metropolitan environment has arisen. In Section 3 and 4, we examine the case of Rome. Section 5 provides some brief conclusions.

2. Changing in city-countryside relationships

The urban zones of the Mediterranean area are the historical nodes of an exchange system that goes beyond the borders of the individual nations in which they are located. Echoing Matvejevitch (1995), we could say that the Mediterranean itself invented the city. According to Weber, examining urban phenomena implies looking also at the areas in a territory "dominated" by the cities, where, in addition to the authority exercised by city dwellers based on economic forces, dynamics of social and political power also come into play (Petrillo, 2001). The relationship between cities and neighbouring territories, especially in the Mediterranean context, is marked by relationships of dominance, which are often manifested through behaviour - typical of the urban environment - of seeking profit, accumulating capital and projecting urban influence onto the surrounding territory, thereby extending economic, social and environmental trends and logics beyond a city's physical and functional dimensions. While the processes of urbanisation have been, at least in part, determined by the economic and social transformations of the industrial revolution, the more recent progress towards an advanced tertiary sector has set the conditions for the definitive development of urban systems. Several features emerge in this framework that differentiate Mediterranean environments from those of the continent as a whole. As highlighted by Salvati (2012), an analysis of Mediterranean cities captures the contrast between a more mature urban model, typical of the Northern shoreline - despite not being completely balanced or morphologically compact - and a more spontaneous and largely disorganised archaic model, associated to the Southern shoreline, whose structures are only apparent in regions with greater history, politics and settlements. In these Mediterranean areas, from the early 20th century onwards, urban growth has concentrated in large and medium-sized cities, in tendentially more compact forms. Following a dynamic process, cities first experienced overcrowding in central areas, caused by the increase in population, and, later on, in the city outskirts. This was succeeded by a period of densification in the urban fringe, still relatively close to the city centre, with city planning chasing housing growth in the recurrent trend apparent in the urban areas of Lisbon, Barcelona, Marseille, Rome, Naples, Athens, Thessaloniki, Istanbul and, to a lesser degree, of many other cities situated on the northern shores of the Mediterranean.

In such a changing context, it is worth asking whether cities still exist and in what form. Harvey (2012) states that, over the past 50 years, the world has become totally urbanised, losing the duality aspects whereby city and country life were distinct from each other. The reality today consists in continuously intersecting and disjointedly connected city and countryside. Indovina (2009) also identified the outcome of this process in the forms that a metropolis takes within a territory, where services and dimension are still those of a modern city, while density is a completely new factor. In this context, there is space to redefine the roles and configurations assumed by the primary sector within a metropolitan environment. Where does the urban form develop and what relationships does it establish with the countryside and landscape? Where does Rome finish? What are its boundaries? How can the various configurations of the territory and approaches to planning - those relating to space and relationships - within the Roman area be classified?

In Italy, recent regulatory developments have called into question the structure of metropolitan areas (Law n.1212). Metropolitan cities are seen as vast urban bodies extending over large areas, partially inspired by the European administrative models of London, Amsterdam and Barcelona. Metropolitan cities take responsibility for the fundamental functions of general planning in the territory, the organisation of co-ordinated public services,

mobility and traffic management, economic and social development. These changes present new challenges and opportunities linked to the Statute regulating the modalities and tools to co-ordinate the overall governance of the metropolitan area.

With the purpose of interpreting the complex transformations that affect the urban phenomenon and their relations with the agricultural and rural landscape and also the intermediate configurations, we decided to start from the principle of territorialisation developed during the cognitive process that can be traced back to the work of the Ministry for Territorial Cohesion under Fabrizio Barca (DPS, 2013). The distinctions between rural and agricultural environment are identified by the central role that, in the second case, is taken by agricultural activity. This imprints a territorial organisation on the territory, linked to settlements and socio-economic structures, all associated to primary production. In the case of rural territories, the primary sector is one of its activities and forms (together with forestry and natural areas, etc.), without necessarily being the most prevalent.

The focal point of this work is the polycentric nature of the Italian territory, where groups or networks of towns are the centres around which gravitate more or less peripheral areas. The most convincing element of Barca's classification seems to be that of placing urban areas at the centre of the dynamics of a territory, and so capturing their significance as pole attractors and ability to act as pivots in local processes. The main factor for the classification is, therefore, access to essential services, such as education, mobility and health, together with a factor relating to size for urban areas with a population of over 35,000. In detail, the classification in question starts by identifying the urban poles and then distinguishing the other classes into suburban, intermediate, peripheral and outermost peripheral areas. In this work, these classes have been incorporated into three categories, urban (the poles), suburban (peripheral and intermediate areas) and rural (peripheral and outermost peripheral).

Mediating between the size-related factor and that linked to accessibility, and assuming that the availability of essential services is a variable describing future development (of both settlements and production), this classification can define particular situations where contiguous urban and suburban areas are apparently fused together (Figure 1). Alongside this, is the snapshot produced by Barca's classification of the landscape. While suburban and urban expansion prevails along the eastern arch of Rome, the urban fabric suddenly interrupts along the western arch, leaving large swathes of agricultural land. The urban-rural boundaries, therefore, take on different forms and meanings, while remaining defined by the concurrence and interpenetration of city and agriculture. Therefore, dealing with the processes of exchange between city and countryside, and the transformation to the relationships between an urban demand and a rural or agricultural offer, implies both reading the dynamics of change in an evolutionary prospective, and verifying the interpretive categories chosen to decode the events taking place.

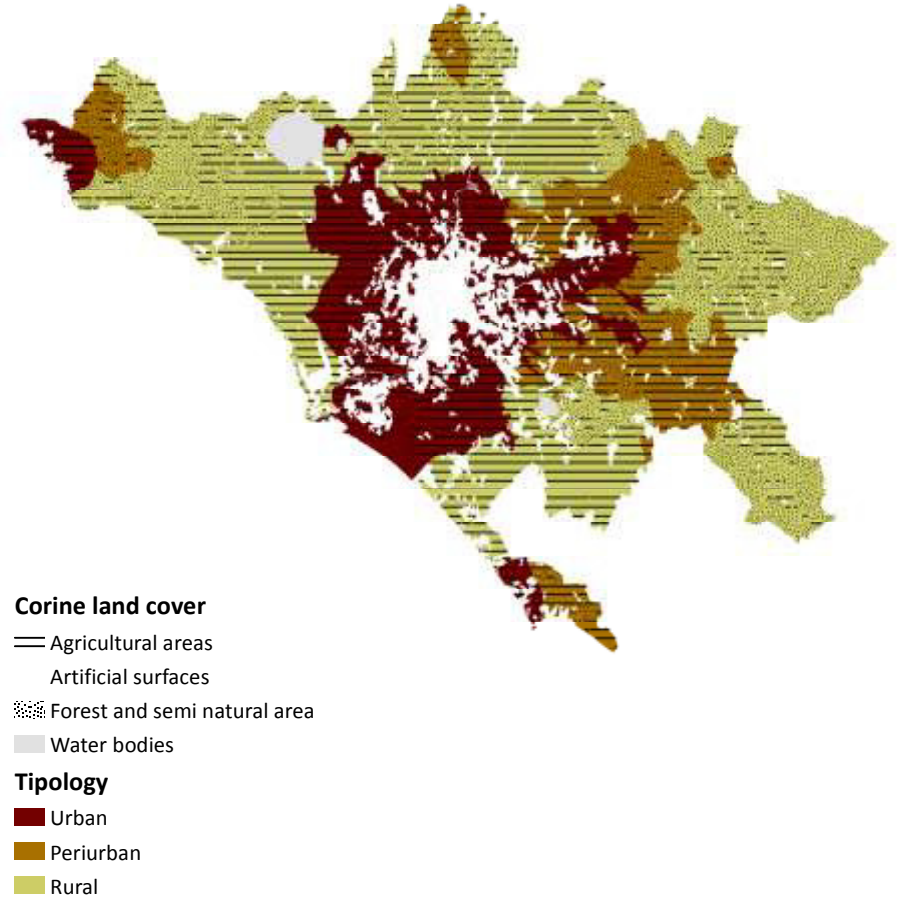

Fig. 1. Rome: city-countryside relationships at metropolitan scale.

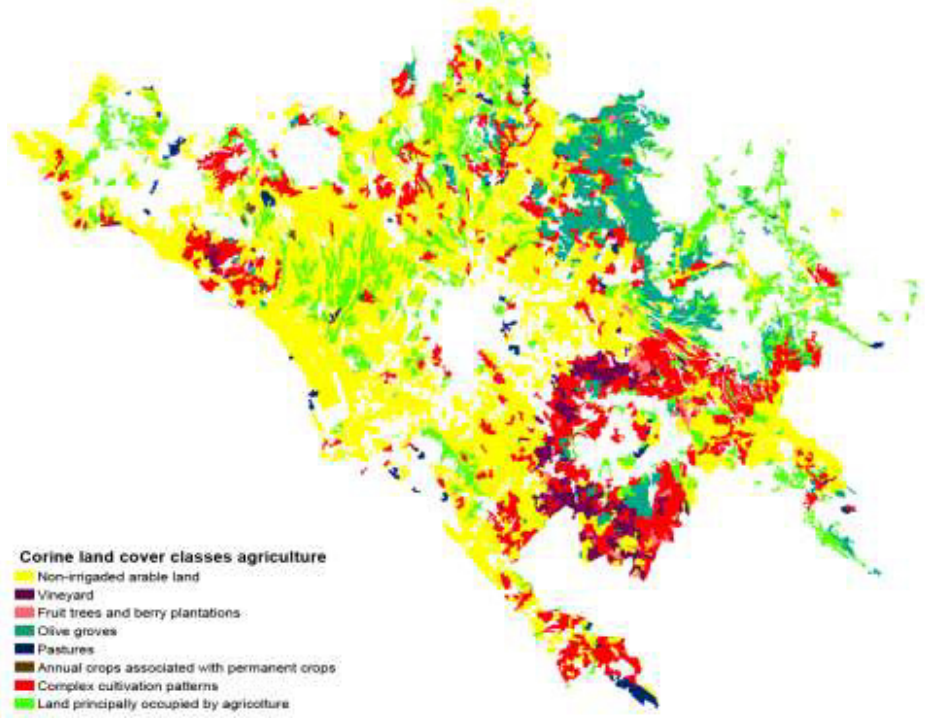

Figure 2 – Rome: CLC, 2006

3. The role of urban agriculture in Rome

A tradition of strong links between urban population and local agriculture characterized Rome throughout the various historical ages, until the last decades, when the industrialized long food chains has become dominant.

Nowadays, the relations between Rome and its surrounding countryside can be better understood with reference to the spatial distribution of the urban suburbs and settlements.

On consulting the last agricultural census (Istat, 2012), opposing trends are recorded for the City of Rome compared to the metropolitan, regional and national trends. The area cultivated within the City of Rome between 2000 and 2010 has increased, registering a growth of 6,236 hectares, nearly 17% of the "utilised agricultural area" (UAA). A similar increase was recorded for the "total agricultural area" (TAA)[1], which grew by 6,289 hectares, an increase of 12% compared to the previous census. Looking carefully at all the transformations taking place within the productive fabric of the area, here also the tendency runs counter to the metropolitan, regional and national trends. In the City of Rome, over the past ten years, 763 farms were surveyed, 40% more than in 2010, and there are 2,656 farms in Rome today. This is even more interesting if compared with similar data relating to other Italian and Mediterranean contexts, where, over the last ten years, the cultivated areas within the urban and metropolitan area

[1] The Total Agricultural Area (TAA) is equivalent to the total area on a farm used for growing crops, including woods and uncultivated agricultural land and other land occupied by parks, gardens buildings, ponds, canals, etc. The Utilised Agricultural Area (UAA) is all the land used for growing crops, plus the areas occupied by household vegetable gardens, perennial fields and meadows, trees cultivated for their produce and chestnut groves. It is the land used by the farm for growing agricultural produce.

have decreased significantly. Looking at the information relating to size of farms in the territory of the City of Rome, just under 30% of these farms are classed as tiny (less than one hectare), slightly less than for Greater Rome, where small-sized farms are 32% of the total number. In the capital, the farms between one and five hectares are 34% of the total, those between five and ten hectares are slightly less than 10%, the medium-sized farms, between ten and 50 hectares are also 10%, and medium-large and large farms, 50 to over 100 hectares, are less than 4% of the total number. This reveals an extremely fragmented land structure, and a certain fragility in terms of landownership as an instrument for preserving the landscape. From the point of view of the distribution of farms by acreage covered, large operations of over 100 hectares, despite being only 2% of the total number of Roman farms, occupy over 40% of the UAA. Farms of between 50 and 100 hectares cultivate over 10% of the land, while those between 10 and 50 hectares all together own 24% of the agricultural land. Farms between 5 and 10 hectares occupy 7% of the UAA, and those up to 5 hectares slightly over 11% of the total UAA. The detail of a cross-survey examination by land size reveals that, in the decade under examination, the number of smaller farms - those up to two hectares in size - increased, as did those between 20 and 30 hectares. The overall picture of how the UAA has evolved shows that the increase of cultivated areas is distributed relatively homogeneously among the different crops. The area used for crops from woody plants grew by 78% in 10 years, followed, in order of growth, by tree plantations for wood production, which increased by 45.5% and arable crops, with a growth of just under 15%. Among the latter, there is a preponderance of rotated fodder crops and cereals for producing grain, while olive trees and vines are among the woody plants cultivated for their crops. Between the two surveyed intervals, farms practising organic methods went from 44 to 100 units, increasing from 2.3% to 3.8%. Arable crops take up the bulk, and for the area of Rome alone, they represent nearly 38% of the total cultivated area at the metropolitan level. In terms of land area, the most significant crops are potatoes, nearly 73% of the total for the province, and also beets, industrial plants and fodder. Trees are cultivated on 3,209 hectares at Rome, occupying 10% of the land in the metropolitan area where woody crops are grown. Among the latter, olive trees unquestionably prevail, with 1,726 hectares, followed by vines, with 911 hectares. At a metropolitan level, protected crops (in greenhouses) and grazing meadows play a considerable role, with a total of 5,712 hectares, more than 10% of the entire metropolitan area. The canvas of Roman agriculture is completed by the livestock sector. Despite the current difficult economic phase faced by livestock in the Lazio region as a total, in Rome, the sector is of primary importance, especially when looking at the role of dairy farms, with cattle about 20% and buffalo over 27% of the farms in the greater metropolitan area, while sheep breeding involves 20% of farms in the total area. Together with the complex agricultural mosaic of the metropolitan environment, the other prevalent feature seems to be the vitality of Roman farms (Marino et al., 2013), especially those within protected areas, 39% of the total, when specifically looking at diversification, multi-functionality and innovation (Cavallo et al., 2013). The landscape is still that of the Roman countryside, with cultivations of grain and fodder, intermingled and dotted with natural vegetation.

The role played by the local food network in Rome is remarkable, particularly in case of farmers' market, Solidarity Purchased Groups' (SPG) and those linked to box schemes experiences have seen significant success. The increasing importance of Alternative and Local Food Networks is showed in the data: the 60% of Rome municipalities farms sell directly (Istat, 2010) it was registered an increase of + 57% Farmers' market at municipality level and of + 64% in Rome's province (2010/13) (Marino et al., 2013). However farmers' markets are increasingly common, that are held periodically with different cadences (once a week, once or twice a month) and involve from 10 to more than 40 farmers. Nowadays, we register 71 SPG's 49 of which in the city of Rome, therefore there are 5.399 local food farms (direct sale) (744 of these in Rome city) and 43 farmers' markets (32 of these in Rome city.

Is considerably also the role played by social farming also due to the Province of Rome, who established under Law No. 112/05 the Forum Social Farms, as an advisory body that aim to study, to coordinate and monitoring the social farms of the area. The local food network behind agriculture in the city, within a number of integrated social agrarian cooperative, who represented an alternative food production system and landmark for many initiatives carried out by the civil society, associations, cooperatives, volunteer and school sectors, community supported agriculture (CSA) initiatives.

In terms of environmental values we considered the role played by Roma Natura, the authority who manage the protected area of Rome in order to promote forms of agricultural development compatible and offer new opportunities to the best vocations of the territory, in cooperation with farm union, Coldiretti and Confagriculture,

has promoted a Register of multifunctional farms (RIM). Nowadays, 27 farms are registered. These protected areas are the main environmental infrastructure of Rome, and the city has assigned to these vast parks the role of green structures on a metropolitan level. Nearly all of Rome's parks have large agricultural areas – apart from limited forest areas.

Since the first census of horticultural gardens in Rome in 2000, the number of urban gardens has risen considerably, but the phenomena is strictly spontaneus character based on informal dynamics, single households both in small plots of land (along theriverbanks or in other marginal areas). Since 2009, the city of Rome saw the rising of urban garden and allotments experiences, in which part of land are divided into smaller plots, farmed by group of pro-active citizens. The main beneficiaries are supposed to be the persons directly engaged in the activity, but there are also initiatives open to a wider usage such as special events.

The Rome municipality has estabilish in "Parco della Consolata" an allotment gardens of 18.000 squared metres with 21 plots. To conclude, researchers from the Italian Institute of Agriculture Economics (INEA) have developed a methodology for mapping all the cultivated fields in the city by photo interpretation and by exploiting the features of the most used web-mapping services, a kind of spatial database concerning urban agriculture in the city of Rome. The current version of the database contains more than 4.000 covering a total surface of about 35.000 hectares with a total farmed area of about 400 hectares. The geo-referenced database was realized by interpreting the high resolution images of Google Earth for the year 2007 and 2013, with the aim to allow further analysis on the temporal evolution of the initiative.

4. Best practices in Urban agriculture in Rome

The cooperative "Agricoltura Nuova" is one of the most relevant and well-established initiatives of social professional farming in Rome because of the wide range of the activities that it covers. The cooperative received part of the land for their pet-therapy activities for disable people and weak communities. It is represents a relevant experience for using agriculture and food as a tool for building new forms of social cohesion.

The project "Orti Solidali" – solidarity garden project – started in 2009, aiming to create a more sustainable way of food consumption. The project tried to create a closer relation among consumers and producers, acting as a tool to take benefit of the current food climate, in order to encourage a more sustainable production with greater accountability to consumers and with fair returns for producers. Often, farm workers involved in the project are young refugees, this aspect clearly underlines a usage of the land as a tool for social inclusion. Each garden plot is allocated to a family or an individual, who is supposed to pay an annual subscription and receives a fixed amount of vegetables, every week.

Regarding the public food service, one of the most important project deserving to be presented is known as the Quality Revolution, concerned with school canteen service in Rome. In the last decade the concept of quality has been widely used to describe the dynamics that have been shaping the system of food and agriculture. In order to understand the nature and implications of the relationship between quality and policy in the public food service sector, in Rome, it is fundamental to start from the analysis that Roberta Sonnino and Kevin Morgan (2008) and concerning the School Food Revolution started 10 years before. When Law 488/99 was issued , Rome was governed by the Green Party administration and the mayor was Francesco Rutelli, interested in promoting organic within catering service in schools. The strategy involved representatives from the organic certification bodies, which were asked to identify those product able to sustain the impact of Rome's public food service massive demand.

Considered the large market involved, contracted companies requested and obtained a dialogue with the Municipality authorities, in order to produce a shared willingness and direction (Sonnino, 2009). Nowadays the Central Department of Education actively promoted and monitored a new initiative, involving an agricultural cooperative in a primary school "Uruguay", where twice a month the school meals come from a farm based near the school itself.

A consolidated and also increasing UA type is the educational gardens linked with Municipality, as well as social farming network, involving school groups and young people within their school and extracurricular activities to improve the awareness to the issues of the environment and nutrition.

5. Final remarks

The issues linked with urban agriculture call for a framework integrating a wide range of sustainable food and agriculture system elements into a community at a site, neighbourhoodor city-region level, beyond the boundaries of the urban areas itself, including towns, semi-urban areas, and outlying rural lands. Cities are a part of social-ecological systems and agricultural production is an integrated urban activity that contributes to the resilience of cities. Most future urban expansion will occur in areas of low economic and human capacity, which will constrain the conservation of biodiversity and management of ecosystem services. City-region food systems are an increasingly important driver for many other urban policies such as health and nutrition, education, landscape management, transport, environment, waste and water management, disaster risk reduction, adaptation to climate change and social welfare. A growing number of local governments across the world are rebuilding their food systems through innovative public policy. A paradigm shift in both planning and policy formulation is required in order to ensure access to food, foster inclusion and innovation, improve environmental management, enhance rural-urban linkages and provide policy guidance at both national and municipal level. The character of urban food policy food calls for a concerted commitment at both EU and national level as well as City-region efforts. To implement wide-ranging food policies cities should have a designated department that works as a vehicle for change, policy making, facilitating projects, providing consultancy, training, communication affecting all stakeholders in the food system able to manage the changing in urban phenomenon.

In terms of structure and planning, the metropolitan city assumes the strategic functions and some operational functions on a greater scale (transport, large infrastructures, environment, waste, etc.) and local administrations, formed into associations, are given the full operational responsibility for planning decisions at a local level that concern their territory (Mariano, 2014).

By redefining the relationships between city and surrounding countryside, the relationship between rural areas and metropolitan and urban environment requires both a multi-level approach and local governance. In this development, agrarian territories can become *milieux innovateurs* (Camagni and Maillat, 2006), within catalysing processes mediated by urban environments, that encourage systems of relationships based upon geographical - and indeed social, economical and cultural - proximity, generating innovation and learning processes, which, in turn, will give rise to collective projects and actions, over and beyond the district and regional level. In this sense, it would appear that challenges and opportunities linked to the new structure are, in particular measure, connected to the role of the Statute, which was introduced to regulate the modalities and tools for co-ordinating the overall action of governance in the metropolitan territory. Can ambiguity - between city practices and country practices - be found in the current interpretation and transformation models of the territory? What is the right level? What should define which implementation tools? On addressing this questions, the possibility emerged that landscape can be interpreted by comparing the aspects relating to productive processes that are typical of an agrarian landscape, and, precisely, farm regulations, extension, relationship with the city system and localisation. This interpretation emerges downstream from the observation that states that any landscape, of any type, quality or extension, is the result of transformative actions, and, therefore, once the descriptive features of the community - in this case the farm - that help its configuration are identified, it is possible to interpret the landscape and direct its transformation contextually. Communities transform the landscape. Trying to interpret a landscape without taking into account the transformation process carried out by the communities that live there means just taking a snapshot of a permanent process. Only by keeping interpretation and transformation together is it possible to act on the landscape through strategies that are shared and, therefore, effective. In the face of a renewed attention to the debate on what is defined by some as the “new urban question”, public policies are required to deal, on the one side, with the sustainable restructuring of existing buildings and, on the other, with building density in relation to protecting the agricultural territory and boundary areas.

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