

# 1 **Food Production for the City: Hybridization of Farmers' Strategies between Alternative and**

## 2 **Conventional Food Chains**

### 3 **Abstract**

4 Alternative and local food supply chains (ALFSCs) have been indicated as drivers of territorial  
5 development through increasing the food security at local scale. The aim of the study is to characterized  
6 strategies that periurban farmers adopt to contribute to local food provision through ALFSCs. We  
7 surveyed a sample of 55 farmers in the urban region of Pisa, Tuscany (Italy). By combining qualitative and  
8 quantitative analysis of on-farm surveys, this study characterized three farmers' strategies, depending on  
9 the percentage of production they allotted to local markets: few/passive, intermediate/opportunistic,  
10 entire/active. The main factors influencing each strategy were personal and professional bonds,  
11 diversification of the commercial network, the number and the diversification of products sold in ALFSCs.  
12 Even though farmers can allocate 100% of their production to ALFSCs, most farmers combine ALFSCs with  
13 conventional food chains, suggesting that hybridization has advantages for the sustainability of these  
14 farms. Farmers who adopt an opportunistic strategy appeared more dynamic and adaptable to local  
15 opportunities and constraints. This analysis will offer empirical evidence about the participation of  
16 farmers in ALFSCs and especially about the hybridization between conventional and alternative food  
17 chains, contributing to characterize of the local supply of produce, with benefits for community food  
18 security.

### 19 **Introduction**

20 Recent international debate has renewed interest in the food production function of periurban  
21 agriculture. The FAO reports that the growth of urban populations raises concerns about food security  
22 and the kind of food production possible in areas surrounding cities in terms of quality and quantity (FAO  
23 2010). From this perspective, several local and international institutions recently have begun to discuss  
24 and develop food plans and urban food strategies. As stated by Sonnino (2014), the interest of such  
25 strategies lies both in the efficiency of the supply side in terms of logistics and quantity, but also  
26 increasingly in how production can be reconciled with the limits of sustainability (Sonnino 2014). Several

1 institutions and researchers have linked this debate to the possibilities offered by alternative food  
2 networks and short food-supply chains by considering their potential to promote more environmentally  
3 sustainable modes of production (Renting, Marsden and Banks 2003). In their report for the European  
4 Union (EU), Kneafsey et al. (2013) studied the implication of Alternative Food Chains (AFCs) and Short  
5 Food Supply Chains (SFSCs) as a possible sustainable tool to support the Local Food System (LFS)  
6 (Kneafsey et al. 2013). By assessing the number of research projects financed by EU funds over the past  
7 15 years, these authors also demonstrate the interest in LFSs and SFSCs. The Rural Development pillar in  
8 the 2014-2020 Common Agricultural Policy has placed the “development of short supply chains and local  
9 markets” as one of the six priorities, with a variety of economic, social and environmental benefits.  
10 Institutions’ interest in such experiences agrees with several reports that assert that while the number of  
11 farms has decreased, direct selling and other AFCs have increased. In the United States, for example, the  
12 farm’s direct sale has more than doubled between 1997 and 2007 (USDA 2014), while the number of  
13 farmers’ markets has grown from around 1,755 in 1994 to around 8,000 in 2014. The farms more  
14 involved in this food systems are especially those located in or near urban areas (USDA 2010). In light of  
15 this evidence, project’s reports define these food chains as an “emerging European sector in the food-  
16 related economy” (Balázs 2009).

17 Considering these worldwide sources of evidence and the emerging debate on the contribution of  
18 periurban farming systems to local food security, we explore in this study the effective participation of  
19 periurban farmers in LFSs through AFCs and SFSCs. This contribution has three sections. First, we  
20 introduce the debate about the concepts of AFCs and SFSCs, and the debate about their benefits. We  
21 discuss the concepts of hybridization between AFCs and conventional food chains (CFCs). Finally, we  
22 present evidence from the literature about farmers’ strategies in commercialization choices between  
23 AFCs and CFCs. In the second part we present a case study, the method for choosing sample farms,  
24 indicators, and the analysis methods applied. In the third part we discuss the main results from  
25 qualitative and quantitative analysis of farmers’ strategies and conclude with reflections on the  
26 hybridization of farmers’ strategies.

## 27 **1. Analysis of farmers’ strategies between alternative and conventional food chains**

## 1.1. Debate about alternative and short food-supply chains in periurban areas: a potential tool for territorial development

In general, AFCs intend to restore consumers' connection with food producers (Ilbery and Maye 2006; Hvitsand 2016; Marsden, Banks and Bristow 2000), which is counter to the dominant agro-industrial model of CFCs (Deverre and Lamine 2010). Included in AFCs, SFSCs (Renting, Marsden and Banks 2003) were promoted for their importance in reducing food miles, thus improving the environmental sustainability of food system (Smith 2008), as well as their ability to maintain agriculture around urban areas (Aubry and Kabir 2013), which provides value to local food (Duram and Oberholtzer 2010) and local producers. This is due to their capacity to "re-spatialize" and "re-socialize" food provision (Marsden, Banks and Bristow 2000) and the support for the embeddedness of the food supply (Winter 2003). In the literature, SFSC is a broad term in which multiple degrees of locality emerge: from extended value, in which a product is sold outside its region of production, to food provision based on a face-to-face relationship between consumers and producers, or on the spatial proximity of the sale of farmers' produce, where periurban agriculture can play an important role (Marsden, Banks and Bristow 2000).

The development of such SFSCs is seen as an indicator of entrepreneurship and innovation for periurban agriculture because of agriculture's adaptation to new demands from the city for local food (Lamine and Perrot 2008) or as farmers' "positive" reaction to urban competition (Paül and McKenzie 2013). Authors have identified several drivers that explain the development of these supply chains in periurban areas, such as the accessibility of local consumer markets (Jarosz 2008), social contacts between producers and consumers, different kinds of distribution (Holloway, et al. 2007), and proximity, which encourages farmers to identify market niches, innovate and adapt to new demands (Le Grand and van Meekeren 2008).

Within these contributions, the local dimension is perceived both as a reason for the success of SFSC development and as a space where it is possible to have the best benefits of such innovative experiences. Many authors have insisted that these AFCs are operational tools for territorial development (Lamine, 2014), and they are frequently associated with the promotion of sustainable development across the global food system (Sundkvist, Milestad and Jansson 2005).

1 Nevertheless, several authors have discussed the real capacity of such food chains to be innovative  
2 drivers of the new rural social economy (Goodman 2004). This is also due to the literature adopting a  
3 broad definition of AFCs and SFSCs (Holloway et al. 2007) to include “anything that is not conventional”  
4 (Venn et al. 2006) and not questioning the differentiation of practices, networks, farmers’ motivations,  
5 and the real impact they produce in a given territory (Tregear 2011). For example, Venn et al. (2006)  
6 emphasize that AFCs and SFSCs are not always driven by food producers. Their goals are not necessarily  
7 to maximize farmers’ profit or market penetration, and thus they are not in line with sustaining farmers’  
8 entrepreneurship, highlighting the potential negative impact on farmers’ profit (Venn et al., 2006).  
9 Tregear (2011) stressed that farmers’ motivations in AFCs are not always compatible with more  
10 sustainable practices and Watts, Ilbery and Maye (2005) stated that a “detailed scrutiny of the social and  
11 environmental consequences of strong AFCs would be welcome”.

## 12 **1.2. Hybridization of CFCs and AFCs**

13 Several studies have demonstrated that SFSCs and AFCs cannot be possible everywhere or under every  
14 condition and that farmers’ personal motivations, market constraints and other external conditions they  
15 encounter may determine the success and maintenance of such alternative commercialization (Hvitsand  
16 2016; McElwee, Anderson and Vesala 2006). Empirical analyses have identified several constraints. In  
17 Denmark, for example, Eriksen and Sundbo (2015) have analyzed barriers and drivers related to the  
18 characteristics of local food networks or the entrepreneurial network and the experience economy, that  
19 may affect development of such food networks. In Latvia, Grivins and Tisenkopfs (2015) observed that in  
20 individual actors’ practices, *conventional* and *alternative* discourses “often overlap” and are connected.  
21 Through analysis of livestock producers in the Scottish-English border region, Ilbery and Maye (2006)  
22 recognized that “a straightforward polarity between (...) mainstream food systems and (...) locally  
23 dedicated food systems is unlikely”. According to their study, local farmers combine local/alternative and  
24 CFCs, i.e., farmers “have not really moved from one system to another – the new arrangements are part  
25 of the one overall system” in which farmers have created a “niche” market (Ilbery and Maye 2006).

26 The debate on the “hybridization of food chains”, initially proposed by Ilbery and Maye (2006) has  
27 undergone further analysis that explore the exact boundaries between the “conventionality” and the

1 “alternativeness” of food chains. For example, Forney and Häberli (2015) assess the potential  
2 transformative power of AFCs in CFCs, e.g. big agribusinesses that establish a process of  
3 “conventionalization of organic production” or adopt policies for social inclusion of local farmers (Forney  
4 and Häberli 2015). Similarly, Tregear (2011) discussed the capacity of AFCs to promote sustainable  
5 development through sustainable farming practices by observing that motivations and practices of  
6 farmers in participating in AFCs linked more to the short-term profit of being in a new market than any  
7 real intention to promote sustainable production practices or food chain systems (Tregear, 2011).  
8 Considering this debate, many authors have asked for deeper knowledge about the relations between  
9 farming systems and food systems within the framework of AFCs. This will highlight the variability in AFCs  
10 (Venn et al., 2006) and help research to properly place these experiences in the sustainable development  
11 process (Izumi, Wright and Hamm 2010). According to Sonnino and Marsden (2006), this means operating  
12 a “new process of re-localization of economic activities and practices”.

13 While the literature on AFCs usually has its starting point in the food chain itself (Aguglia, DeSantis and  
14 Salvioni 2008; Brunori, Rossi and Guidi 2012), we begin with the food producers to recognize the “hybrid  
15 and creative character of the solutions orchestrated by farmers” within different types of food chains  
16 (Sonnino and Marsden 2006). This means overcoming the “unlikely rigid distinction” between AFCs and  
17 CFCs (Ilbery and Maye 2006), which promotes a more extensive and complex understanding of farmers’  
18 experiences. This should particularly facilitate understanding of farmers’ motivations and strategies for  
19 participating in and promoting AFCs, which will benefit urban food policies and assessment of impacts of  
20 such experiences on local development.

### 21 **1.3. Farmers’ strategies**

22 Some of the literature focuses more on farmers’ commercial strategies in developing countries and on  
23 transitions from subsistence to market agriculture rather than on different marketing strategies (Jarosz  
24 2008; Pingali and Rosegrant 1995; López-Ridaura et al. 2005; Zasada et al. 2011). Regarding the debate  
25 about farmers’ choices of AFCs and CFCs (e.g. on-farm direct sales, farmers’ markets), some of the  
26 literature focuses on “commercial strategies”, “marketing strategies”, “strategic response”, or “marketing  
27 decision-making” (Andreatta 2000; Kirwan 2004; Poole 2000; Uematsu and Mishra 2011; Wen-Fei 2002).

1 In general, these contributions only consider specific products (Poole 2000) or a specific farming system,  
2 such as organic farming (Andreatta 2000; Poole 2000), or they characterize one type of food chain, such  
3 as direct marketing (Uematsu and Mishra 2011). Nevertheless, we find interesting elements in the  
4 literature that aid in understanding why farmers develop a strategy that includes AFCs and SFSCs. In  
5 general, it seems that the “farmer strategic response” (Poole 2000) is due to a specific set of “skills and  
6 abilities” (Wen-Fei 2002) or more generally to internal and external “factors influencing farmers’  
7 production and marketing strategies” (Poole 2000; Uematsu and Mishra 2011). Table 1 summarizes some  
8 of the contributions of these factors found in literature.

9 *Table 1 Drivers of marketing strategies adaptable for developing AFCs and local marketing strategies*  
10 *according to the literature.*

#### 11 **1.4. Aim of the study**

12 We aim to characterize strategies that periurban farmers adopt by understanding specific factors that  
13 distinguish farmers who are part of a local commercialization network through ALFSCs. Considering the  
14 debate previously mentioned about the definition of AFCs/CFCs/LFSs, we define ALFSCs as food chains in  
15 which farmers have knowledge and/or control of the final destination of the product, and therefore they  
16 are able to restore their food-chain relations. In this way, the food chain is alternative (Renting, Marsden  
17 and Banks 2003). Instead of using the term “short”, which the literature uses to refer to different degrees  
18 of locality (Marsden, Banks and Bristow 2000), we use the term “local” to refer to the area where the  
19 product is produced and sold. Regarding the definitions of “short” by Marsden, Banks and Bristow 2000,  
20 we refer to face-to-face and “spatial-proximity” sales.

21 Because of our interest in the contribution of periurban agriculture to the LFS through ALFSCs, we  
22 grouped into one class all the food chains that are not solely for local consumption. By this class, “Other  
23 Food Supply Chains” (OFSCs), we mean food chains in which a farmer’s produce is not explicitly sold for  
24 local consumption. In other words, we refer to CFCs, as defined by Renting, Marsden and Banks 2003, as  
25 well as AFCs that are not for local consumption (e.g. direct on-farm sales for tourists) (Renting, Marsden  
26 and Banks 2003).

1 As previously mentioned, a farmer's strategy is a complex mechanism affected by multiple factors and  
2 may require many indicators to be explained. Our first hypothesis is that the choice of allotting different  
3 percentages of production to ALFSCs depends on specific common elements among farmers of the same  
4 group. The null hypothesis is that the difference is random among the three groups. By this analysis we  
5 offer an initial analysis of the complex mechanisms of factors that enable farmers to implement their  
6 strategies. Study of these factors highlights the variety of farmers' experiences that result from adapting  
7 to their territory. In particular, the empirical analysis in this study offers evidence about factors that may  
8 characterize farmers' "hybrid" strategies related to the choice of ALFSCs and OFSCs. For this reason, we  
9 include indicators that can consider both ALFSCs and OFSCs to overcome the methodological polarity  
10 between ALFSCs and CFCs (Sonnino and Marsden 2006).

11 To better understand hybridization of strategies based on a combination of factors, and the impact that  
12 this effect can have on periurban farming systems, we adopted a territorial approach that considers  
13 farmers by the territory where they work (Lardon et al. 2012) and not just the food chain to which they  
14 contribute.

15 **The second hypothesis is that diversified food production in many farming systems can match the hybrid**  
16 **strategies of commercialization at territorial level.** This is especially true for periurban farming systems,  
17 which have new dynamics linked to the new urbanization (Pascucci 2007). Periurban farmers can take  
18 advantage of the new proximity to urban consumers and at the same time still participate in CFCs linked  
19 to previous conventional farming systems, or they can have easier access to global markets because of  
20 the proximity to infrastructures and services. For this reason, we consider farmers who participate  
21 exclusively in ALFSCs and farmers who participate in OFSCs and ALFSCs, even for a small part of their  
22 production. This will help to assess the effective contribution of such food chains to the sustainable  
23 development of periurban areas, as well as to local food security.

## 24 **2. Materials and methods**

### 25 **2.1 Case study: periurban farming in the urban region of Pisa**

1 The case study is the urban region of Pisa (Fig. 1), a medium-sized city of 86,000 inhabitants in Tuscany,  
2 Central Italy. This urban region has a surface area of 500 km<sup>2</sup> and consists of six municipalities associated  
3 in an inter-municipality (Area Pisana) located in the coastal plain of the Arno river and in the hilly area  
4 known as Monte Pisano (917 m a.s.l.). As a common trend of European periurban areas, population has  
5 decreased in the main city since the eighties and increased in the proximal small towns (Fig. 2). Also local  
6 agriculture follows the main trend of Mediterranean agriculture: the number of farms decreased from  
7 1990 to 2010 (-56%), especially for vegetables (-92%), while mean farm size slightly increased for all the  
8 farming systems (Marraccini et al. 2012). This periurban area is relevant for our analysis not just because  
9 of its administrative borders and distance from the largest and most important city, but also because of  
10 its geographic borders, which have created a unique social identity compared to nearby areas. The  
11 territorial production system of Pisa seems different from that of other areas: agriculture is neither  
12 specialized nor specific to one food chain, mixed farming systems still persist in the area (ISTAT 2011) and  
13 farmers rely on several types of commercial organization. This enabled us to study the multiple strategies  
14 possible for different types of primary produce.

15 *Fig. 1 Location of the case study of the urban region of Pisa in Tuscany (Italy). In red, the borders of the*  
16 *municipalities which are part of the urban region.*

## 17 **2.2 Method**

18 The method used to assess farmers' strategies is divided into four steps: selection of a representative  
19 sample of farms, interviews, development of an indicator grid, and statistical and qualitative analysis.

### 20 **2.2.1. Farm sampling and selection**

21 *In the sampling process, a stratified sampling has been used. The farm population from the Land Parcel*  
22 *Identification System database (LPIS) was divided in homogeneous subgroups, representing the local*  
23 *farming system. Farms were selected considering three criteria: the main farming system, the farm size,*  
24 *and the geographic distance of the farmstead from the urban center (Fig. 2). Thus they have been*  
25 *contacted and selected on the base of their acceptance to participate in the interviews. They were*



1 selected to represent the territorial farming system of the periurban area of Pisa as described in LPIS  
2 database.

3 The initial sample contained 55 farms representing four main farming systems, whose frequency in the  
4 sample reflected the existing territorial farming system: extensive crops (65%), livestock (14%), vegetable  
5 (13%), and olive-groves (8%) oriented systems. ~~We directly contacted farmers to conduct interviews.~~  
6 Among the 55 farmers interviewed in 2013, we selected the 29 farmers who had local commercial  
7 relationships with the urban area of Pisa. We then excluded 3 farmers whose relationships with the city  
8 were too difficult to evaluate due to a lack of data and frequency of commercialization. Consequently, 26  
9 farmers surveyed produced food for local urban consumers and were included in the analysis.

### 10 **2.2.2. Farmer interviews**

11 We conducted semi-structured face-to-face interviews with 55 farmers in 2013 as part of a larger project  
12 on the knowledge and evaluation of the sustainability of periurban agriculture in Mediterranean areas  
13 (DAUME project).

14 The on-farm interviews covered several topics: the farm territory, the crop management, farm  
15 management, the land use intensity, the commercialization and the individual characteristics of farmers.  
16 Based on the interviews, we divided the 26 farmers with local and alternative commercialization into  
17 three groups based on the percentage of production sold in ALFSCs. The farmers in the first group are  
18 exclusively involved in ALFSCs, thus selling the 100% of the production in ALFSCs; the second group is  
19 composed by farmers mostly involved in conventional or global food chains and thus they allotted in  
20 ALFSCs only a marginal percentage of the production, less than 10%; finally, the in the third group,  
21 farmers devote to ALFSCs a percentage between greater than 10% and less than 100% of the total  
22 production.

23 We explored the main characteristics of these three groups of strategies and the factors that distinguish  
24 farmer membership in them. The analysis was both quantitative, using indicators that differentiate the  
25 groups, and qualitative, by describing the nature and reason for adopting a certain strategy.

### 26 **2.2.3. Qualitative analysis of interviews**

1 Farmers' interviews were recorded, rewritten and analyzed qualitatively. The qualitative method is based  
2 on in-depth analysis of interview and textual analysis (Corbetta 2003). Especially, the most relevant parts  
3 have been selected, which concerned the motivations, the constraints, the opportunities and all the  
4 action farmers have organized in participating in ALFSCs. Those parts were deeply analyzed in order to  
5 understand the relevant elements for farmers for developing their marketing strategies.

6 The textual analysis of interviews helped to identify indicators as well as to interpret and explain the  
7 results of quantitative analysis.

#### 8 **2.2.4. Developing an indicator grid**

9 Indicators were extrapolated from the literature (see Table 1) and from the information collected in the  
10 interviews. In Table 2,3,4,5 a specification of it is given. The first set of indicators refers to "Farm  
11 Structure", which included specific land use, human labor and tools (machinery and buildings). Since we  
12 focus on local commercial relationships, we included indicators about farms' location. We also assessed  
13 the importance of multifunctional activities (Table 2). Based on the literature, we included indicators of  
14 "Farmer Characteristics", such as the degree of innovation, participation in networks, and the personal  
15 importance of factors such as the workplace, the products, the involvement in stakeholder networks, and  
16 the added value from ALFSCs (Table 3). Indicators in the set "Products Sold" refer to the differences in  
17 product processing, quality, and destinations between ALFSCs and OFSCs (Table 4). By including the  
18 principal production, we also assessed which products are sold in ALFSCs and OFSCs. The last set of  
19 indicators refers to "Commercial Network". We particularly wanted to assess the markets that farmers  
20 have organized, which should depend on their personal bonds, their client relationships, the relations  
21 between food networks they have organized, and their perception of constraints (Table 5). We also  
22 added their participation in commercial networks. The 66 indicators were applied to analyze the  
23 marketing strategy in ALFSCs of the 26 farmers ultimately selected.

24 *Table 2 Indicators of farm structure describing the marketing strategies of periurban farms. ALFSCs*  
25 *indicates local and alternative food chains; OFSCs indicates Other Food Supply Chains*

1 *Table 3 Indicators of the farmer characteristics describing the marketing strategies of periurban farms.*

2 *ALFSCs indicates local and alternative food chains; OFSCs indicates Other Food Supply Chains*

3 *Table 4 Indicators of products describing the marketing strategies of periurban farms. ALFSCs indicates*

4 *local and alternative food chains; OFSCs indicates Other Food Supply Chains.*

5 *Table 5 Indicators of commercial network describing the marketing strategies of periurban farms. ALFSCs*

6 *indicates local and alternative food chains; OFSCs indicates Other Food Supply Chains.*

### 7 **2.2.5. Statistical analyses**

8 A quantitative method has been used to characterize each marketing strategy at the farm level using  
9 these indicators and analyzed whether significant differences existed in **median** indicator values. **Given**  
10 **the not normal distribution and the low number of our farm sample, we employed a non-parametric test.**

11 We analyzed differences in indicator's **median** values using the non-parametric **Kruskal-Wallis** test  
12 (Kruskal and Wallis 1953) to identify the significant differences among indicators for the three groups of  
13 strategies.

## 14 **3. Results**

### 15 **3.1 ALFSCs around Pisa: high farm diversity**

16 Farming systems were not randomly located around Pisa (Fig. 3). Olive oil is mainly produced northeast of  
17 the periurban area (Monte Pisano), while horticultural production is mainly to the north, and cereals and  
18 livestock more to the south. Some farms having their farmstead outside the limits of the urban region  
19 were also considered because they have an important farm surface within the considered area.

20 *Fig.2 Farm sample, considering the main farming system's production. **The points on the maps indicate***  
21 ***the farmstead and not the location of the farmland***

22 Livestock production represents 38% of the farms in the sample (Tables 6 and 7). These farms were  
23 mainly specialized in meat production (7 farms), dairy cattle (3 farms), and goat production for milk (2  
24 farms). Their mean size was 134 ha ( $\pm 76\%$ ), with a mean of 85 livestock units (LSU) ( $\pm 82\%$ ). The purpose  
25 of olive production (31% of the sample) is only for producing olive oil, as is typical in the area. Vegetable

1 production (19% of the sample) had a mean size of approximately 12 ha, while cereals (12% of the  
2 sample) had a larger mean size of 273 hectares, but with high variability. Most farms family farms, except  
3 for two: a co-operative (F24) and a public farm belonging to the University of Pisa (F10).

4 *Table 6 Main Characteristics of the farm sample. UAA indicates the Usable Agricultural Area, LSU indicates*  
5 *Livestock Units.* ~~ALFSCs Alternative Local Food Supply Chains~~

6 *Table 7 Main Characteristics of the sampled farming systems, considering the numbers of farms, the*  
7 *corresponding percentage, the average of hectares, the percentage of production delivered to Alternative*  
8 *Local Food Supply Chains (ALFSCs).*

### 9 **3.2 ALFSCs in the periurban area of Pisa: high variability of farmer strategies**

10 Different strategies emerged for the commercialization of products within local and alternative food  
11 supply chains. In the first group (4 farmers, 15% of the sample), a small part of production is provided to  
12 ALFSCs. One farmer from each main production type is in this group. Based on analysis of farmers'  
13 interviews, the main reasons to sell in ALFSCs are proximity to buyers (e.g. neighbors, friends), the  
14 opportunity for special professional bonds (through local institutions), and personal bonds. For this  
15 reason, we called this group the "Passive Strategy". One follower of this strategy is farmer F04, who sells  
16 nearly all (98%) of his sheep milk through conventional commercialization to a regional milk factory, but  
17 the remainder is sold to local consumers and the nearest milk factory.

18 *"I sell milk to the local cheese factory in case they lack sheep's milk." (F04)*

19 Another farmer (F24) has extensive organic crop production sold through national traders in northern  
20 Italy, but decided to dedicate a small percentage of production to organic vegetables to directly sell  
21 through door-to-door sales.

22 *"There's a guy who takes care of the garden; he began while he was at the university...and so he knows a*  
23 *lot of students and formed a kind of informal GAS [Solidarity Purchasing Group]." (F24)*

24 In the second group (17 farms, 65% of the sample), despite the higher percentage of production delivered  
25 to AFN/SFSC and OFSCs ~~(from 15% and 69% on average)~~, farmers try to maximize the benefits of both

1 commercialization strategies. They combine OFSCs, with ALFSCs. Livestock is the main production (41% of  
2 the group), followed by olive oil (29%), vegetables (18%) and cereals (12%). Under this strategy, great  
3 variability exists in both the quantity delivered to local markets and in the organization of  
4 commercialization. Some farmers deliver the same products to both ALFNs and CFNs, so the same  
5 product goes to different food chains, while others deliver different products to different food chains.  
6 There are many reasons farmers practice this double strategy of commercialization: e.g. to maximize  
7 profit, to use pre-existing conventional food chains already developed by the family, and to take  
8 advantage from new networks. Because this strategy seems to take advantage of the many opportunities  
9 farmers encounter, we called this group the “Opportunistic Strategy”. For example, farmers F16 and F08  
10 (vegetable farmers) began to directly sell on-farm or in local markets and also invested in new structures  
11 or in the diversity of products offered to clients. Nonetheless, they also sell at the small wholesale market  
12 where they used to deliver products to ensure that everything will be sold.

13 *“I would like to do more and more direct selling. The profit is higher...but with the wholesale market it is*  
14 *sure that you will sell everything.” (F08)*

15 Several farmers (F19, F22, and F23) need to produce fodder and crops to maintain a particular crop  
16 rotation. This production is not easily sold in the local market; in most cases 100% of main production  
17 (meat, milk, and cheese) is sold in local and AFNs, while the crops and fodder are sold through  
18 cooperatives that collect the product and sell it in national and international markets.

19 In the third group (5 farmers, 19% of the sample) 100% of the production is sold through ALFSCs. In this  
20 group, sale strategies are actively for local consumption through alternative food chains, which is why we  
21 call this group the “Active Strategy”. We observed that the motivations of these farmers for adopting  
22 ALFSCs are shared with the farmers of the Opportunistic Strategy group who sell in ALFSCs. The main  
23 reasons for adopting ALFSCs are the higher control over product destination and quality. ALFSCs seem to  
24 assure more independence in farm management for the farmer.

25 Farmers participating in ALFSCs usually express personal satisfaction as a reason for doing so, which is  
26 also connected to a certain social meaning of the farming activity.

1 *“Direct sales enable us to produce more sustainable production for the city than the big farms” (F20)*

2 A few farmers’ mention the opportunity of being close to the city:

3 *“[Direct sales] is one of the options you can have if you have a green area close to the city” (F20)*

4 Most farmers express the benefits of shorter food chains as the simplification of procedures, crop  
5 management, negotiating, and the possibility of added value of products. Some farmers would like to  
6 avoid supermarkets, which require relatively constant production, with the consequent problem of  
7 disposing of unsold production. Through ALFSCs, it is often possible to have a higher price and more  
8 immediate payments.

9 *“The sale of the produce directly to the consumer is a very important simplification. It is possible to avoid  
10 difficult administrative management” (F20)*

11 *“Supermarkets impose strict rules for products, and there was uncertainty in the amount of product they  
12 want from me...and if by chance I couldn’t sell everything, I did not know where to take it.” (F22)*

13 *“The wholesale markets don’t pay immediately when you bring the product” (F16)*

14 *“The real added value is obtained by directly meeting the consumer” (F23)*

15 *Figure 3 Percentage of production sold in ALFSCs for each farmer*

16 In Fig. 3 it is possible to see the partitioning among the three groups considering the percentage of  
17 production sold in ALFSCs. We can note a certain partitioning between passive strategy’s farmers and  
18 opportunistic strategy’s farmers. This partitioning is less defined in the passage between opportunistic  
19 and active strategy’s farmers. Moreover our data show that most of farmers have at least 50% of the  
20 production in ALFSCs and only one farmer has less than 50%. **This result may suggest that when farmers  
21 invest in ALSFCs, they need to participate in ALFSCs for at least 50% of their production in order to make  
22 their activity viable.** By analyzing the interviews, two main trends seem to characterize the opportunistic  
23 strategy. The first one is characterized by several farmers who would like to increase the percentage of  
24 ALFSCs, but several constraints block them: especially regulatory constraints and market’s constraints. For  
25 example farmer F17 stated that he would like to sell locally organic goat, but there are several regulatory

1 constraints linked to the hygienic requirements of local slaughterhouses, and he also has problems in  
2 finding a local market for this product, while he has not such problems in selling the goat's cheese. In this  
3 sense these farmers can be considered in a process of passage toward ALFSCs. Moreover for horticulture,  
4 wholesale markets ensure the sale of products not sold in AFCs, reducing market risk, but with lower  
5 price, less transparent relationships and delayed payments. The second trend, consider farmers that  
6 choose to maintain a percentage of production in conventional food chains. This choice can be derived by  
7 the interest in preserving the relationships with the conventional food chain, in order to differentiate the  
8 enterprise's risk. For example F8 states that even the wholesale market is based on social relationships  
9 and trust between farmers and buyers, that guarantee a higher price or a faster sale; whenever the  
10 farmer decides to stop this conventional food chain, afterwards it will be more difficult for the farmer to  
11 reintegrate in such commercial relationships. For example, during the interview F16 explains the complex  
12 social relationships that affect also wholesale market, mostly based on the personal knowledge with the  
13 different wholesalers.

14 *"At the market you have to trust your brokers"*

15 *"If you stop to sell in the wholesale market, you are out... someone may take your place"*

### 16 **3.3 Main differences in farm management among the three strategies**

17 In Table 8 it is possible to see the results of **Kruskal-Wallis** analyses, for the indicators resulting with  
18 significant statistical differences among the averages' values of the three groups of farmers.

19 *Table 8 **Kruskal-Wallis** results for significant values for indicators: \* OPP-PAS indicates significant*  
20 *difference only between the groups' opportunistic and passive strategies; \* ACT/PAS-OP indicates*  
21 *significant difference between the groups active and passive by one side and opportunistic strategy by the*  
22 *other side; \* ACT-PASS indicates significant difference between active and passive strategy; \* ACT-*  
23 *OPP/PASS indicates significant difference between the groups active by one side and passive and*  
24 *opportunistic strategy by the other side. Results illustrate the average values of indicators and standard*  
25 *deviation.*

#### 26 **3.3.1 Farm structure**

1 None of the “Farm Structure” indicators is significantly different among the three groups (Table 8). In  
2 other words, no significance difference among the three groups is possible among indicators such as UAA  
3 (Usable Agricultural Area), or Distance from the largest urban centre (DIST BIG) and Distance from the  
4 closest urban centre (DIST CLOS). Similarly indicators for the perception of constraints (CONSTR) and  
5 opportunities (OPPORT) associated with proximity to an urban area are similar among the three groups,  
6 confirming that the distance with urban area is not always a driver for selling more products in urban  
7 areas. In fact, by analyzing the interviews for the three strategies, producing close to the city is an  
8 opportunity because clients are closer, but it is also a source of constraints due to the use and presence  
9 of infrastructures, or the need to manage conflicts with new urban neighbors.

### 10 **3.3.2 Farmer characteristics**

11 For farmer characteristics, we found a significant difference in the Innovation’s indicator of change in the  
12 production strategies in the last 15 years (CHANGE <15y) (Table 8; ~~Fig. 4~~). It might suggest certain  
13 adaptations since previous generations; however, passive-strategy farmers appear to be more static. The  
14 difference is greater between opportunistic and passive strategies ( $p = 0.03$ ) than between passive  
15 strategies and active and opportunistic strategies combined ( $p = 0.02$ ).

16 The importance of specific bonds in participating in ALFSCs seems to be confirmed when among the  
17 Factors affecting farmer involvement in ALFSCs, Network (NETWORK) indicator shows a significant  
18 difference between the three groups: to be part a certain network is a key element in the choice of an  
19 ALFSC. This indicator was significantly different between active strategies and opportunistic and passive  
20 ones ( $p = 0.02$ ).

21 ~~Figure 4 Innovation — General change in the production strategies in the last 15 years. ACTIVE,~~  
22 ~~OPPORTUNISTIC, PASSIVE indicate respectively the three groups of farmers “Active Strategy”,~~  
23 ~~“Opportunistic Strategy” and “Passive Strategy”.~~

### 24 **3.3.3 Farm products**



1 For indicators about farm products, significant differences exist among the three groups for the indicators  
2 Number of products in ALFSCs (N. PROD in ALFSCs) and Number of products in OFSCs (N. PROD in OFSCs)  
3 (Table 8). Other significant differences exist in the sale of grain and crops in OFSCs among active, and  
4 opportunistic and passive strategies, and in the diversification of products between active and passive  
5 strategies vs. opportunistic strategies. No significant difference for example exists among the 3 groups for  
6 quality's indicators, suggesting that quality's labels are not a significant driver for alternative and local  
7 commercialization (Table 8).

#### 8 **Number of products sold in ALFCs and OFSCs**

9 ~~Figure 5 Number of products sold in ALFCs (a) and OFSCs (b). ALFCs indicates Alternative Local Food~~  
10 ~~Supply Chains, OFSCs indicates Other Food Supply Chains.~~

11 Active-strategy farmers sell more produce in local food chains (by number) than the other two groups  
12 (Fig. 5). Thirty percent of opportunistic-strategy farmers sell different products between the two food  
13 chains, while about 40% of farmers sell the same products. The remaining 30% of farmers sell their main  
14 production to both food chains but do not sell some products in local markets. Passive-strategy farmers  
15 sell the same products in both markets except for one farmer (F24) who designates some land for locally  
16 marketable vegetables, while the remaining production was crops and cereals for the global market.

#### 17 **Food processing and other product activities**

18 The "Diversification" indicator was significantly different between active and passive-strategy farmers vs.  
19 opportunistic-strategy farmers, suggesting a major effort of opportunistic strategy's farmers in investing  
20 in diversified products, than active and passive ones. Opportunistic-strategy farmers seem to place more  
21 effort on working with produce offered to local consumers. For example, farmer F16 organized a contract  
22 with a local processing company to differentiate his products from others at the farmers' market in which  
23 he participates. Consequently, he also avoided the high investment of internal processing, which is not  
24 justified by the small percentage of production he allocates for processing.

#### 25 **Types of farming system production in the three strategies between ALFSCs and OFSCs**

1 Considering all the indicators on farm's product, the unique indicator for which there is a significant  
2 statistical difference among the three groups is related to crops and grain sold in OFSCs (GRAIN&CROPS)  
3 ( $p = 0.05$ ). This is due to the fact that all active-strategy's farmers either use all their production to feed  
4 animals or sell crops and grain to neighbors in local markets, while few opportunistic-strategy's farmers  
5 sell some of the fodder locally. Most of the grains and crops products are sold through cooperatives  
6 which sell the product at national and international scale.

7 Results of this analysis suggest that there is not a product that differentiate a strategy in the case of  
8 selling in ALFSCs, while in the case of products sold in OFSCs, grain and crops are specifically devoted to  
9 OFSCs both for passive and opportunistic farmers' strategy. This is especially due to the fact that when  
10 grains are sold in ALFSCs they are processed and sold as bread. For farms that can't process crops and  
11 grain the unique solution is to sell them in OFSCs, demonstrating a gap in for these production local  
12 demand.

### 13 **3.3.4 Commercial Networks**

14 Among commercial network indicators, the Food networks and Farmers' bonds indicators had particularly  
15 interesting results (Table 8).

#### 16 **Food networks**

17 Regarding food networks, a gradient exists in the number of local alternative food networks farmers  
18 participate in to sell their products (N. of ALFSCs), with a significant difference between active and passive  
19 strategies ( $p = 0.04$ ). Comparing the numbers of ALFCs and OFSCs, both opportunistic and passive  
20 strategies rely less on networks when they sell in OFSCs. This is particularly apparent for opportunistic-  
21 strategy farmers, who have more types of networks when selling products in ALFSCs than in OFSCs (Fig-  
22 6). This result may suggest that conventional chains offer less variability for commercial actors. This  
23 indicates that farmers selling in local AFNs have a greater ability to choose between competing food  
24 chains than those who sell in OFSCs.

25 *Figure 6 Number of food chains farmers adopt in participating in ALFCSCs (a) and OFSCs (b). ALFSCs*  
26 *indicates Alternative Local Food Supply Chains, OFSCs indicates Other Food Supply Chains.*

1 Significant differences were found in the indicator for selling the same produce in both ALFSCs and OFSCs,  
2 as well as the indicator for selling a different percentage of products in ALFSCs (Fig. 6). Interestingly, the  
3 opportunistic strategy seems to sell different products in ALFSCs and OFSCs more than does the passive  
4 one.

#### 5 **Farmers' bonds**

6 Results highlight that personal bonds (PERSON) play an important role for all the groups, but especially  
7 distinguish the active strategy from the passive and opportunistic strategies. Institutional (INSTITUTION)  
8 and professional (PROFESSION) bonds did not play a role in the active strategy, while professional bonds  
9 distinguish the three strategies greatly, particularly opportunistic strategies.

#### 10 **4. Discussion and Conclusion**

11 The first result of this study is the delineating and the characterization of the main strategies adopted by  
12 periurban farmers, in order to assess the contribution of ALFSCs to the urban food supply. We reached  
13 beyond simple qualitative analysis by combining indicators from several authors and extrapolating  
14 quantitative indicators from the information collected in the interviews with farmers. In this analysis we  
15 demonstrated large differences in farmers' commercial strategies and in the external and internal factors  
16 that affect farmers' decision-making. The indicators with significant differences among the three  
17 strategies are personal and professional bonds, diversification of ALFSCs, the number of products in  
18 ALFSCs and in OFSCs, commercial networks, diversification of products sold in ALFSCs and innovation.  
19 Location, farm area, and farmers' characteristics have less influence in distinguishing the strategies,  
20 despite what literature about periurban farming systems seems to suggest (Aubry and Kebir 2013).  
21 Moreover, our results show that when farmers following active or opportunistic strategies participate in  
22 ALFSCs, they can choose between different competitive food chains, as well as they diversify profit  
23 between different and diversified products. Interestingly, opportunistic-strategy farmers differ from other  
24 farmers in the number of food chains, the number of products in OFSCs, and diversification of products.  
25 They also seem more open to adapt to the new challenges of urbanization and to adopting innovations in  
26 their farming systems. In this sense, opportunistic-strategy farmers show greater entrepreneurship and

1 dynamism than in passive- and active-strategy farmers. Further studies could improve this analysis by  
2 including other quantitative indicators, such as economic or agronomic indicators.

3 By the investigation of the three strategies we demonstrated also in this case study the high degree of  
4 hybridization of solutions in farmers' marketing strategies. All this was possible through a "process of re-  
5 localization of economic activities and practices" (Gliessman 2016; Sonnino and Marsden 2006). Although  
6 the results are significant only for the periurban area of Pisa, our **mixed method**, based on indicators that  
7 consider both conventional and AFCs, allowed us to overcome the "polarity" between them (Sonnino and  
8 Marsden 2006). Further studies should analyze not only the trade-off between these two types of food  
9 chains but also to assess possible relations and interdependence between them. Our results suggest that  
10 some forms of interdependence may exist, especially observing opportunistic strategy. The results on  
11 opportunistic strategies highlight two main trends. In the first one, farmers in the opportunistic strategy  
12 face several market and regulatory constraints in selling products through ALFSCs. This is the case for  
13 certain products such as grain, fodder, and organically raised goats, which is confirmed by qualitative  
14 analyses of interviews. These products are outputs of the production cycle, but since farmers cannot find  
15 space in the local market through ALFSCs, they have no recourse but to adopt conventional food chains,  
16 such as international traders, which may result in a loss of local value for farmers and a potential loss of  
17 food sovereignty for the local food system. In this case farmers can be considered in transition toward  
18 ALFSCs. This leads to reflections on the implications of political actions, able to free farmers from  
19 constraints and making more production available for the local food system. In the second trend farmers  
20 decide to combine ALFSCs and OFCs in order to differentiate the enterprise's risk. In this case, reflections  
21 have to be made on the possible correlation between alternative and conventional food chains, local and  
22 global food systems.

23 Moreover our results suggest that hybridization of strategies may be possible for all the farming systems.  
24 Thus, we can conclude that a diversified local farming system is in line with hybridization of farmers'  
25 marketing strategies **at territorial scale**. Further studies could assess what is the implication of  
26 hybridization in more specialized farming systems.

1 In the investigation of the variability in farmers' strategies, this study has been based on combining a  
2 territorial approach, which may advance the territorial development of periurban areas through new  
3 economic opportunities such as ALFSCs. Territorial development of periurban areas and its agriculture  
4 results from farmers' ambition and adaptation of efforts to maximize their profit and personal  
5 satisfaction, along with to maximize their productions and improve their networks. By understanding  
6 variability in farmers' strategies, we contribute to the debate surrounding Local Food Systems (Kneafsey  
7 et al. 2013) and demonstrate the benefit of focusing on drivers of farmers' commercial strategies in  
8 different regions. This highlights the importance of investigating those factors that promote the  
9 contribution of local food production to community food security (Anderson and Cook 1999). Results  
10 from our case study could be used to strengthen links between professional networks of farmers and  
11 other food chain actors and political stakeholders, as well as to sustain the differentiation of products  
12 that farmers sell at the local level, which enhances local initiatives for new local markets. Our work could  
13 expand knowledge about the connections between the demand and supply of local products. It could also  
14 encourage the design of effective food policies that can sustain the development of such connections,  
15 which benefits urban food security.

16

## References

- Aguglia, L., F. De Santis, and C. Salvioni. 2008. Direct Selling: a Marketing Strategy to Shorten Distances between Production and Consumption. Paper presented at the 113th Seminar European Association of Agricultural Economists, 3–6 September Chania, Greece.
- Anderson, M.D., and J.T. Cook. 1999. Community food security: Practice in need of theory? *Agriculture and Human Values* 16(2):141–150.
- Andreatta, S.L. 2000. Marketing Strategies and Challenges of Small-Scale Organic Producers in Central North Carolina. *Culture & Agriculture* 22(3):40–50.
- Aubry, C., and Y. Chiffolleau. 2009. Le développement des circuits courts et l'agriculture péri urbaine: histoire, évolution en cours et questions actuelles. *Innovations Agronomiques* 5:53–67.
- Aubry, C., and L. Kebir. 2013. Shortening food supply chains: A means for maintaining agriculture close to urban areas? The case of the French metropolitan area of Paris. *Food Policy* 41:85–93.
- Balázs, B. 2009. *Comparative analysis of the context of AAFNs at the local, national and European level*  
[http://www.faanweb.eu/sites/faanweb.eu/files/FAAN\\_D3\\_Comparative\\_analysis\\_AAFNs.pdf](http://www.faanweb.eu/sites/faanweb.eu/files/FAAN_D3_Comparative_analysis_AAFNs.pdf)  
(accessed January 9, 2014).
- Brunori, G., A. Rossi, and F. Guidi. 2012. On the New Social Relations around and beyond Food. Analysing Consumers' Role and Action in Gruppi di Acquisto Solidale. *Sociologia Ruralis* 52(1):1–30.
- Corbetta, P. 2003. *Social Research theory, methods and techniques*. London, UK: Sage Publications.
- Deverre, C., and C. Lamine. 2010. Les systèmes agroalimentaires alternatifs. Une revue de travaux anglophones en sciences sociales. *Économie Rurale* 317(3):57–73.

- 1 Duram, L., and L. Oberholtzer. 2010. A geographic approach to place and natural resource use in  
2 local food systems. *Renewable Agriculture and Food Systems* 25(2):99–108.
- 3 Eriksen, S.N., and J. Sundbo. 2015. Drivers and barriers to the development of local food networks in  
4 rural Denmark. *European Urban and Regional Studies* doi: 10.1177/0969776414567971.
- 5 FAO – Food and Agriculture Organization of the United Nations. 2010. *Food, Agriculture and Cities*  
6 *Challenges of food and nutrition security, agriculture and ecosystem management in an*  
7 *urbanizing world.*  
8 [http://www.fao.org/fileadmin/templates/FCIT/PDF/FoodAgriCities\\_Oct2011.pdf](http://www.fao.org/fileadmin/templates/FCIT/PDF/FoodAgriCities_Oct2011.pdf) (accessed  
9 February 18, 2014)
- 10 Forney, J., and I. Häberli. 2015. Introducing “Seeds of Change” into the Food System? Localisation  
11 Strategies in the Swiss Dairy Industry: Introducing seeds of change into the food system?  
12 *Sociologia Ruralis* doi: 10.1111/soru.12072.
- 13 Gliessman, S. 2016. Can food production be re-localized? *Agroecology and Sustainable Food Systems*  
14 40(1):115–115.
- 15 Goodman, D. 2004. Rural Europe redux? Reflections on alternative agro-food networks and  
16 paradigm change. *Sociologia Ruralis* 44(1):3–16.
- 17 Grivins, M., and T. Tisenkopfs. 2015. A discursive analysis of oppositional interpretations of the agro-  
18 food system: A case study of Latvia. *Journal of Rural Studies* 39:111–121.
- 19 Holloway, L., M. Kneafsey, L. Venn, R. Cox, E. Dowler, and H. Tuomainen. 2007. Possible Food  
20 Economies: a Methodological Framework for Exploring Food Production–Consumption  
21 Relationships. *Sociologia Ruralis* 47(1):1–19.

- 1 Hvitsand, C. 2016. Community Supported Agriculture (CSA) as a Transformational Act—Distinct  
2 Values and Multiple Motivations among Farmers and Consumers. *Agroecology and Sustainable*  
3 *Food Systems*. doi: 10.1080/21683565.2015.1136720
- 4 Ilbery, B., and D. Maye. 2006. Retailing local food in the Scottish–English borders: A supply chain  
5 perspective. *Geoforum* 37(3):352–367.
- 6 ISTAT – Istituto Nazionale di Statistica. 2011. 6° Censimento generale dell'agricoltura. Risultati  
7 definitivi. <http://www.istat.it/it/archivio/66591> (accessed June 29, 2013)
- 8 Izumi, B.T., D. Wynne Wright, and M.W. Hamm. 2010. Market diversification and social benefits:  
9 Motivations of farmers participating in farm to school programs. *Journal of Rural Studies*  
10 26(4):374–382.
- 11 Jarosz, L. 2008. The city in the country: Growing alternative food networks in Metropolitan areas.  
12 *Journal of Rural Studies* 24(3):231–244.
- 13 Kirwan, J. 2004. Alternative Strategies in the UK Agro-Food System: Interrogating the Alterity of  
14 Farmers' Markets. *Sociologia Ruralis* 44(4):395–415.
- 15 Kneafsey, M., T. Eyden-Wood, E. Bos, G. Sutton, F. Santini, S.G. Paloma, L. Venn, U. Schmutz, B.  
16 Balázs, and L. Trenchard. 2013. Short Food Supply Chains and Local Food Systems in the EU: a  
17 state of play of their socio-economic characteristics. <http://ftp.jrc.es/EURdoc/JRC80420.pdf>  
18 (accessed September 25, 2014).
- 19 Kruskal WH, Wallis WA. 1952. Use of ranks in one-criterion variance analysis. *Journal of the American*  
20 *Statistical Association*. 47(260): 583–621.
- 21 Lamine, C. 2014. Sustainability and Resilience in Agrifood Systems: Reconnecting Agriculture, Food  
22 and the Environment: Sustainability and resilience in agrifood systems. *Sociologia Ruralis*  
23 55(1): 41–61.



- 1 Lamine, C., and N. Perrot. 2008. *Les AMAP: un nouveau pacte entre producteurs et consommateurs?*  
2 Paris, France : Yves Michel.
- 3 Lardon, S., Moonen, A.-C., Marraccini, E., Debolini, M., Galli, M., and Loudiyi, S. (2012). The Territory  
4 Agronomy Approach in research, education and training. In *Farming Systems Research into the*  
5 *21st Century: The New Dynamic*, eds. I. Darnhofer, D. Gibbon, and B. Dedieu. pp. 257–280.  
6 Dordrecht, Netherlands: Springer.
- 7 Le Grand, L., and M. van Meekeren. 2008. *Urban–rural relations: Dutch experiences of the leader+*  
8 *network and rural innovation in areas under strong urban influences*. Presented at the  
9 Conference Rurality near the City, February 7-8, Leuven, Belgium.
- 10 López – Ridaura, S., H.V. Keulen, M.K. van Ittersum, and P.A. Leffelaar. 2005. Multiscale  
11 Methodological Framework to Derive Criteria and Indicators for Sustainability Evaluation of  
12 Peasant Natural Resource Management Systems. *Environment, Development and*  
13 *Sustainability* 7(2):51–69.
- 14 Marraccini, E., M. Debolini, C. Di Bene, H. Rapey, and E. Bonari. 2012. Factors affecting soil organic  
15 matter conservation in Mediterranean hillside winter cereals-legumes cropping systems.  
16 *Italian Journal of Agronomy* 7(3): 283-292.
- 17 Marsden, T., J. Banks, and G. Bristow. 2000. Food supply chain approaches: exploring their role in  
18 rural development. *Sociologia Ruralis* 40(4):424–438.
- 19 McElwee, G., A. Anderson, and K. Vesala. 2006. The strategic farmer: a cheese producer with cold  
20 feet? *Journal of Business Strategy* 27(6):65–72.
- 21 Pascucci, S. 2007. Agricoltura periurbana e strategie di sviluppo rurale.  
22 [http://www.depa.unina.it/depa/WP\\_2\\_2007.pdf](http://www.depa.unina.it/depa/WP_2_2007.pdf) (accessed February 7, 2014)

- 1 Paül, V., and F.H. McKenzie. 2013. Peri-urban farmland conservation and development of alternative  
2 food networks: Insights from a case-study area in metropolitan Barcelona (Catalonia, Spain).  
3 *Land Use Policy* 30(1):94–105.
- 4 Petit, C., F. Bressoud, and C. Aubry. 2010. The effects of transition towards short supply chains on  
5 liveability of farming systems: initial findings and further research needs. Presented at 9th  
6 European IFSA Symposium, 4-7 July, Vienna, Austria.
- 7 Pingali, P.L., and M.W. Rosegrant. 1995. Agricultural commercialization and diversification: processes  
8 and policies. *Food Policy* 20(3):171–185.
- 9 Poole, N.D. 2000. Production and marketing strategies of Spanish citrus farmers. *Journal of*  
10 *Agricultural Economics* 51(2):210–223.
- 11 Reynolds, N., C. Fischer and M. Hartmann. 2009. Determinants of sustainable business relationships  
12 in selected German agri-food chains. *British Food Journal* 111(8):776–793.
- 13 Renting, H., T.K. Marsden, and J. Banks. 2003. Understanding alternative food networks: exploring  
14 the role of short food supply chains in rural development. *Environment and Planning A*  
15 35(3):393–411.
- 16 Smith, B.G. 2008. Developing sustainable food supply chains. *Philosophical Transactions of the Royal*  
17 *Society B: Biological Sciences* 363 (1492):849–861.
- 18 Sonnino, R. 2014. The new geography of food security: exploring the potential of urban food  
19 strategies: The new geography of food security. *The Geographical Journal*. doi:  
20 10.1111/geoj.12129
- 21 Sonnino, R., and T. Marsden. 2006. Beyond the divide: rethinking relationships between alternative  
22 and conventional food networks in Europe. *Journal of Economic Geography* 6(2):181–199.

- 1 Sundkvist, Å., R. Milestad, and A. Jansson. 2005. On the importance of tightening feedback loops for  
2 sustainable development of food systems. *Food Policy* 30: 224–239.
- 3 Tregear, A. 2011. Progressing knowledge in alternative and local food networks: Critical reflections  
4 and a research agenda. *Journal of Rural Studies* 27(2):419–430.
- 5 Uematsu, H., and A.K. Mishra. 2011. Use of Direct Marketing Strategies by Farmers and Their Impact  
6 on Farm Business Income. *Agricultural and Resource Economics Review* 40(1):1–19.
- 7 USDA – U.S. Department of Agriculture. 2010. *Varied Interests Drive Growing Popularity of Local*  
8 *Foods*. [http://www.ers.usda.gov/amber-waves/2010-december/varied-interests-drive-](http://www.ers.usda.gov/amber-waves/2010-december/varied-interests-drive-growing-popularity-of-local-foods.aspx#.VXhlGEZUyVB)  
9 [growing-popularity-of-local-foods.aspx#.VXhlGEZUyVB](http://www.ers.usda.gov/amber-waves/2010-december/varied-interests-drive-growing-popularity-of-local-foods.aspx#.VXhlGEZUyVB) (accessed May 15, 2015)
- 10 USDA – U.S. Department of Agriculture. 2014. *Agricultural Marketing Service – Farmers Market*  
11 *Growth*.  
12 [http://www.ams.usda.gov/AMsv1.0/ams.fetchTemplateData.do?template=TemplateS&leftNa](http://www.ams.usda.gov/AMsv1.0/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers+Market+Growth)  
13 [v=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers+](http://www.ams.usda.gov/AMsv1.0/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers+Market+Growth)  
14 [Market+Growth](http://www.ams.usda.gov/AMsv1.0/ams.fetchTemplateData.do?template=TemplateS&leftNav=WholesaleandFarmersMarkets&page=WFMFarmersMarketGrowth&description=Farmers+Market+Growth) (accessed May 15, 2015)
- 15 Venn, L., M. Kneafsey, L. Holloway, R. Cox, E. Dowler, and H. Tuomainen. 2006. Researching  
16 European “alternative” food networks: some methodological considerations. *Area* 38(3):248-  
17 258.
- 18 Watts, D.C.H., B. Ilbery, and D. Maye. 2005. Making reconnections in agro-food geography:  
19 alternative systems of food provision. *Progress in Human Geography* 29(1):22–40.
- 20 Wen-Fei, L.U. 2002. An Analysis of Vegetable Farms’ Direct Marketing Activities in New York State.  
21 [http://ageconsearch.umn.edu/bitstream/122632/2/Cornell\\_Dyson\\_rb0203.pdf](http://ageconsearch.umn.edu/bitstream/122632/2/Cornell_Dyson_rb0203.pdf) (accessed  
22 September 23, 2014).

1 Winter, M. 2003. Embeddedness, the new food economy and defensive localism. *Journal of Rural*  
2 *Studies* 19(1):23–32.

3 Zasada, I., C. Fertner, A. Piorr, and T.S. Nielsen. 2011. Peri-urbanisation and multifunctional  
4 adaptation of agriculture around Copenhagen. *Geografisk Tidsskrift-Danish Journal of*  
5 *Geography* 111(1):59–72.

