



# XXVII European Society for Rural Sociology congress

## On-line Proceedings

24 – 27 July 2017

Kraków, Poland

Published by the Institute of Sociology, Jagiellonian University  
in Krakow

Address: ul. Grodzka 52, 31-044 Kraków, Poland

[www.sociologia.uj.edu.pl](http://www.sociologia.uj.edu.pl)

Kristina Svelds (Editor)

321 pages

**Proceedings of the XXVII Congress.** *Uneven processes of  
Rural Change: On Diversity, Knowledge and Justice*

ISBN 978-83-947775-0-0 eBook – PDF



**Kraków** MAŁOPOLSKA





# Role of Small farming in food security and sustainability: a case study for Tuscany(IT)

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**Abstract** – The paper seeks to explore how and in what ways small farms bring a distinctive contribution to food systems, by focusing on food and nutrition security and environmental and socio-economic outcomes. The study is performed with reference to Lucca province in Tuscany (Italy). Combining quantitative and qualitative research, we adopt a double perspective: from the regional food system considering small farming and, conversely, from (selected) small farms looking out to the wider (regional) food system.

## INTRODUCTION

The debate on the size of farming, and its relevance for policy purposes, has come back to the fore in recent years. The “International Year of Family Farming and Smallholder Farming”, held by FAO in 2014, aimed to raise the profile of family and smallholder farming worldwide”. During EXPO 2015, a debate followed on structural developments in agriculture and the implications for the competitiveness and sustainability of the agri-food sector and rural areas. Despite a declining number of agricultural holdings and a gradual increase in average farm size, the agricultural sector is largely composed by farms with less than 5 ha of agricultural land and a standard output below 4 000 euro per year. Beyond economic size and value of production, other criteria (e.g. labour units and family involvement can be adopted), alone or in combination, to define size of farming. Academic literature provides a mixed picture on whether a declining number of farms, and a gradual increase in size should be welcomed or contrasted. Oppositional arguments contrasting smaller and larger farm structures with respect to sustainability and food and nutrition security, are nourished by the lack of sufficient or unambiguous scientific evidence. A first line of thought stresses the distinctiveness of smaller farms in delivering food security and sustainability (Rabinowicz, 2014) and the capacity of small farms to mobilize resources additional to those procured through market exchange (van der Ploeg, 2013). A second line of thought considers size as a non-relevant criterion to assess the performance on food security and sustainability (OECD, 2005), supporting the view on steering behaviours oriented towards improved sustainability, regardless of size. Dualistic debates often focus on some aspects of sustainability and neglect others (Kirwan et al. 2017) or overlook the importance of complementarity between complex agro-food systems and territoriality, as local context

largely affects what structural change is desirable at territorial level (Darnhofer et al. 2010). This contribution presents the conceptual and analytical framework adopted in a research project named SALSA, “Small farms, small food businesses and sustainable food and nutrition security (FNS)”, and provides an illustration on one of the 35 reference regions selected. The analysis considers Lucca province in Tuscany and aims at generating preliminary insights in relation to the role of small farms in food and nutrition security.

## CONCEPTS METHODOLOGY

To understand the contribution of small farms to food system outcomes we adopt a double perspective: i) *From the regionalized food system into small farms.* The research on complex systems studies the dynamics and patterns of systems consisting of interacting elements. System thinking means “taking a position which allows to see the whole picture and to avoid getting lost in too many details” (Balmann, 2016: 10) going beyond analytical approaches and dealing with interdependent sets of variables. We follow the conceptualization of food systems as the organization of production, processing, distribution and consumption of food (Ericksen 2008). ii) *From small farms into the food system.* This perspective leads to understanding the connections of (selected) small farms to the regional food system flows and outcomes, considering that farms need to be understood as a system in themselves. The analytical steps entail assessing food system outcomes in the reference region and the role of small farming and understanding small farming typologies and contribution to food system outcomes.

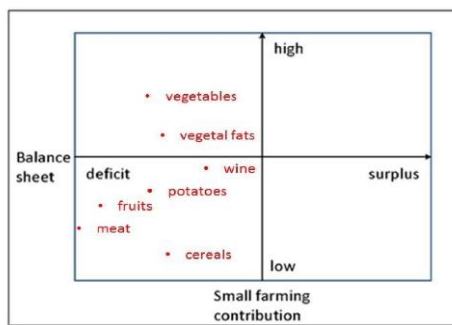
## RESULTS

The province of Lucca (Tuscany, central Italy) spans across three distinguished areas and covers an

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area of 1773 km<sup>2</sup>, populated by over 390 thousand people. The farming sector comprises 6543 holdings of an average size of 3.72 ha, of which 86% below 5 ha, producing cereals, olive groves, fruit, vineyards, vegetables and potatoes. A balance sheet comparing estimated agricultural production (based on surfaces and yields) and estimated consumption (based on EFSA survey and population by age class) was constructed. It shows that across all farming sectors, local production is insufficient to satisfy the potential demand. Hence, the contribution of small holdings (considering those with less than 5 ha of UAA) was calculated, indicating that smaller farms contribute relatively more to producing vegetables and olive oil (Figure 1).

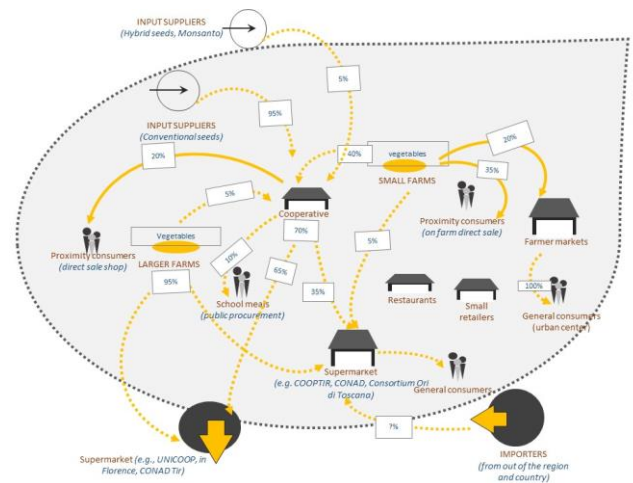


**Figure 1 – Role of small farming in Lucca production and consumption balance.**

Based on key informants' interviews for selected relevant commodities, we mapped upstream and downstream food system connections, considering smaller and larger farmers (Figure 2 provides an example for fruit and vegetables). Concerning typologies, it can be asserted that, in the province of Lucca, small farms are relatively more oriented to mixed cropping and self-consume more than larger farms (53% of small farms versus 2% of larger farms consume all farm production) and that prevalently sell directly to consumers (74% of small farms adopt on farm and off farm direct sale).

#### DISCUSSION AND CONCLUDING REMARKS

This preliminary overview of a territorialized food system illustrates the framework applied to one of the reference regions studied within the Salsa project. To understand the impact of small farms on FNS, the role that small farms play into given food systems must be addressed. By framing small farms in the context of the food production and consumption, results will account for the different strategies for subsistence and sustainability that the small farm households engage with.



**Figure 2 – Food system mapping: example for vegetables**

Further research in this direction will allow to understand how different system configurations can affect the intensity of FNS outcomes.

#### ACKNOWLEDGEMENT

This research is part of the project granted by the EU under Horizon 2020, Grant agreement no: 265927.

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