

Territorial fitting of small farms in Europe

Talis Tisenkopfs^{a,*}, Anda Adamsone-Fiskovica^a, Emils Kilis^a, Sandra Šūmane^a,
Mikelis Grivins^a, Teresa Pinto-Correia^b, Hilde Bjørkhaug^c

^a Baltic Studies Centre, Kokneses Prospekts 26-2, Riga, LV, 1014, Latvia

^b University of Evora, Largo Dos Colegiais 2, Evora, 7000-803, Portugal

^c Department of Sociology and Political Science, Norwegian University of Science and Technology (NTNU) and Ruralis - Institute for Rural and Regional Research, Loholt alle 85, Universitetsenteret dragvoll, Trondheim, 7491, Norway

ARTICLE INFO

Keywords:

Small farms
Territorial fitting
Food and nutrition security
Sustainability
Rural development

ABSTRACT

This paper proposes a novel concept of territorial fitting for the analysis of the functioning of small farms in broader food, environmental, and socio-economic systems. We elaborate on the framing and definition of territorial fitting (TF) in relation to other concepts, such as territorial and social embeddedness, nested markets and territorial governance. Based on an analysis of empirical manifestations of territorial fitting as found in sample studies of small farms in Latvia, Portugal, and Norway we determine dimensions of territorial fitting such as natural resources, integrated landscape, social ties, and economic ties. Our approach to the identification and articulation of TF is characteristic of exploratory studies that attempt to conceptualise emerging findings. The study suggests that TF works by: (i) improving integration in niche markets and regional food systems; (ii) supporting micro-management of nature and eco-systems; (iii) connecting fields of activity, like agriculture, forestry, rural and environmental services; and (iv) establishing new territorial linkages. We argue that the concept of territorial fitting has the potential for further research on the role of small farms in food systems.

1. Introduction: Why territorial fitting?

When considering the future of sustainable agricultural, rural development and food security, policymakers and researchers increasingly pay attention to small farms (SFs). SFs play an important role in special quality food production (Alexandri et al., 2015; Ricciardi et al., 2018), the diversification of the rural economy (Tisenkopfs et al., 2015), management of natural resources and landscape (Salvioni et al., 2009), provision of employment and family income (Alexandri et al., 2015), and rural social life (Shucksmith and Rønningen, 2011). The ongoing concentration of production in European agriculture has resulted in a sharp decrease of the number of smallholdings (Eurostat, 2018). Agricultural policies and market structures that are less supportive to SFs have been among the main factors that decreased the role of SFs (Minicyte, 2011; Veveris and Kalis, 2011; Labarthe and Laurent, 2013), making them less attractive for succession and limiting their capacity to generate social, economic, and environmental benefits (Pinto-Correia et al., 2017).

In this paper, we address the territorial dimension of SFs. We view

SFs as place-based units that embrace and reproduce resources via territorial links at different scales. We propose the concept of territorial fitting (TF) to conceptualise the relationships of SFs with their immediate surroundings and more distant places. SFs typically operate at the proximity level (i.e. domestic or household economy, self-provisioning) and are engaged in local and regional food supply chains, contrary to bigger farms which are frequently detached from their local contexts and integrated into large-scale structures. This proximity entails positioning SFs in relation to a set of local territorial assets. At the same time, SFs may be empowered via links to wider socio-economic geographies: markets, value chains, knowledge and innovation systems, etc. (Primdahl and Swaffield, 2010).

In this paper, we provide a description of the genesis and theoretical foundation of TF, and explain it with examples of SFs from Latvia, Portugal, and Norway – countries that represent different contexts in the European farming. We identify key dimensions of TF and examine the links between TF and the functioning of SFs. This paper is guided by three background questions: (1) What makes TF distinct compared to other territorial approaches? (2) What are the empirical manifestations

* Corresponding author.

E-mail addresses: talis.tisenkopfs@lu.lv (T. Tisenkopfs), anda@lza.lv (A. Adamsone-Fiskovica), emils.kilis@gmail.com (E. Kilis), Sandra.sumane@gmail.com (S. Šūmane), Mikelis.grivins@gmail.com (M. Grivins), mtpc@uevora.pt (T. Pinto-Correia), hilde.bjorkhaug@ntnu.no (H. Bjørkhaug).

<https://doi.org/10.1016/j.gfs.2020.100425>

Received 1 October 2019; Received in revised form 6 August 2020; Accepted 15 August 2020

Available online 6 September 2020

2211-9124/© 2020 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

and dimensions of TF? (3) How is TF related to the economic, social and environmental functioning of SFs?

1.1. Theoretical approach: what is territorial fitting of small farms?

To refine academic understanding of the territorial dimension of SFs we propose the concept of territorial fitting. In general, TF concerns a farm's active use and reproduction of a range of local territorial assets and connections (e.g. biodiversity, community ties, commercial opportunities) through place-based practices that are simultaneously connected to, and draw upon, the resources (natural, social, economic) of other places. Thus, we consider that a territory is relational and networked (Ash, 2020; Jones, 2009). Accordingly, conceptualising TF starts with the farm and the adjacent area, but it can also include connections with distant natural and human-made environments that are established through the activities of the farmer. While TF starts as a micro-level process through which an individual farm adapts to the territory, we contend that this is done at various scales. This paper takes a relational approach to *space* (Lefebvre, 1991; Thrift, 2003) and frames TF as reliant upon interactions and dependencies between rural, peri-urban, and urban areas as well as local and global assets.

We define TF as *the strategies and actions that individual farms undertake with the overall aim of ensuring the sustainability (understood broadly) of the farm by making active use of the available territorial assets and connections, and pooling these at various scales.* We see TF as an exercise of the farmer's agency in farm-place-shaping, with *place* being understood as a networked territory, whose coherence and unity is both material and imagined (see Martin, 2003; Jessop et al., 2008). Therefore, TF illuminates the processes of territorial adaptation and transformation and relates to the farmer's skill to combine various territorial assets through smart planning of farming activities that make use of the strengths and opportunities of the farm's location and connections.

In view of the above, TF can primarily be analysed along four dimensions:

- **Natural resources.** This dimension refers to the connections between the activities on the farm and the natural resources located on the farm and in adjacent places.
- **Integrated landscape.** This dimension refers to the use of land and the perceived aesthetic components of place.
- **Social ties.** This dimension refers to social capital and the connections (both place-based and networked) with communities and individuals that the farm has established and makes active use of.
- **Economic ties.** This dimension refers to the economic links that the farm makes active use of by integrating in various types of markets (e.g. nested, proximity, international).

There is a connection between TF and other concepts that characterise SFs' geographic positioning, such as embeddedness, nested markets and territorial governance. We contend that TF has slightly different, though overlapping, analytical foci which are explained in the next paragraphs.

1.2. Territorial and social embeddedness

The concept of territorial embeddedness derives from the *terroire* approach and environmental perspective (Bowen, 2011). It emphasises the importance of nature, landscape, infrastructure, as well as territorial and social ties in the farm operation. Madelrieux et al. (2018) distinguish between three aspects of territorial embeddedness: geographic embeddedness in nature and locality, the capacity to specify local resources, and the capacity to collaborate locally. Territorial embeddedness can be valorised, for example, in value chains by producing and labelling place-specific products for upstream marketing or engaging in territorial cooperatives.

In economic sociology, local embeddedness emphasises the

contextual factors of economic activities by focusing on location, spatial interaction, and spatial externalities, while also distinguishing between physical and social distance (Kalantaridis and Bika, 2006). The concept of 'social embeddedness' (Granovetter, 1985), in turn, looks at the role of social networks, reciprocity and trust in human economic interaction, which represent an important part of local food systems (Hinrichs, 2000; Migliore et al., 2014).

Similarly, in landscape studies (Raymond et al., 2016; Berglund et al., 2014) the notion of territorial conditions is being used to analyse the heterogeneity of a farm's territorial settings. Munoz-Rojas et al. (2018) distinguish three scales of a farm's territoriality: place (place attachment, sense of place, and place-based identity), landscape (intensive or extensive land use and forms of multifunctionality), and space (the spatial location and relations of a farm). Various embeddedness frames are used to position farms in socio-cultural, economic, and spatial settings. de Herde and Baret (2018) speak of socio-cultural, institutional, value chain, and personal embeddedness of a farm.

In contrast to these forms of embeddedness, which presume the longevity of ties, TF is open to innovative territorial linkages with potentially distant places as a result of the active intervention of the farmer. Thus, TF is a direct expression of a farmer's agency in forging connections that allow the farmer to make use of the resources and possibilities that come with the location of the farm. Whereas the concepts of embeddedness emphasise social and geographic networks in production systems and markets (Hinrichs, 2000; Sage, 2003; Ramirez et al., 2018), TF highlights the importance of the local-global nexus in resource reproduction.

1.3. Nested markets and local-global flows

Recently, the concept of nested markets has been used to describe the process of local actors taking ownership of unique local resources and commodifying them to target customers and niche markets (van der Ploeg et al., 2012). The approach uses the notion of common-pool resources focusing on cases of successful use of historical practices, local trademarks and farmers' tacit knowledge (Augstburger et al., 2019; Grivins and Tisenkopfs, 2018) and illustrates how these resources have allowed local actors to access niche markets or even regain power in global markets. TF emphasises the exposure of SFs to flows of information, values, knowledge, support, collective arrangements, etc. Initiated by the valorisation of locally available natural and territorial resources, TF activities may aim to broaden the farm's territorial, market and social engagement.

Concepts such as multifunctional agriculture (Renting et al., 2009) and economies of scope (de Roest et al., 2018) also focus on interconnections between rural, peri-urban, and urban areas, but they are perceived as a means for farms to provide a broader set of services. TF, on the other hand, approaches these linkages as only partially linked to the market. Instead, TF presents an approach to SFs as being simultaneously part of the local socio-ecological environment and global flows. TF helps to explain how SFs become integrated in markets, even if economic integration is not the only or the main goal of a farm.

1.4. Territorial governance

TF also has some overlaps with the territorial governance approach, which has evolved with the growing involvement of different population groups in decision-making. Territorial governance involves network-type, participatory, often multi-actor (Torre and Traversac, 2011) and multi-level (Koopmans et al., 2018) decision processes regarding local and rural development pathways. However, while territorial governance is a collective participatory process in the management of shared places, TF is farm-centred and focuses on the agency of a farmer and farm-household in managing various territorial assets and connections.

2. Methodology

The study was carried out within the EU Horizon 2020 project SALSA, which focused on the role of SFs and small food businesses in sustainable food security across 25 European and 5 African regions. Based on the current debate about the definition and delimitation threshold of SFs (Davidova, 2011; Hubbard, 2009; Samberg et al., 2016) the project chose to employ a composite definition based on the physical (less than 5 ha of land) and economic (less than 8 economic size units (ESU)¹) size of the farm.² The paper is based on qualitative and quantitative data gathered from semi-structured in-depth interviews with small farmers in three selected NUTS3 level regions of Latvia (Pierīga), Portugal (Alentejo Central), and Norway (Hedmark).

The selected regions represent different farming systems and socio-economic dynamics. Pierīga is characterised by diversified farming, closeness to the capital city Riga, and internal heterogeneity in terms of agri-environmental conditions and socio-economic development. While the region has considerable entrepreneurial activity, agriculture plays a small role in the regional economy. The main branches are cereals (wheat, barley, and rape), dairy farming and pig breeding. Alentejo Central is characterised by a SFs mosaic (“cultura promiscua”) in the surrounding area of towns and villages, and in areas where the natural biophysical conditions are conducive to agricultural production. SFs have different production profiles, combining permanent cultures (olives, fruit trees and vineyards) with horticulture and sheep grazing. Finally, Hedmark is a sparsely populated region, characterised by a relatively high importance of agriculture and forestry. The central parts of the region are populated by large grain producing farms, whereas more remote villages in the forests, valleys and mountains are populated by dairy and sheep farms.

In each study region, approximately 30 face-to-face interviews with farm owners were conducted. (See Annex A for general characteristics of the sample). Sampling was purposeful and the snowball technique was applied to recruitment: research teams identified farms corresponding to the defined criteria of size, and the interviewed farmers designated new research subjects. To capture the diversity of SFs, farms with different socio-economic profiles and in multiple places in the regions were addressed. While TF was not among the SALSA original research topics, the interviews covered a range of topics that revealed SFs links with the territory (farm size, land use, number of plots, production methods, inputs, use of natural resources, relationships with neighbours, distance to cities, public infrastructure, geographical area of marketing, and others (Brunori et al., 2019).

We started without a prior hypothesis regarding TF, which is typical for exploratory studies and grounded theory (Hammersley and Atkinson, 1995; Denzin and Lincoln, 2003). Fig. 1 illustrates the main methodological steps in the elaboration of the TF concept, combining inductive (empirically informed) and deductive (theoretically informed) methods.

During farm visits and interviews we were struck by the diversity of territorial connections and their far-reaching consequences for individual farms and wider communities. We explored these connections with purposeful questioning, uncovering the various empirical manifestations and meanings of TF. This allowed us to elucidate farmer narratives on territorial links among a smaller number of farmers (16) who were willing to elaborate more extensively on these issues, and helped us to reconstruct farm-specific TF profiles. (See Annex B for characteristics of

the sample of small farms selected for in-depth analysis and Annex C for selected examples of SFs TF profiles).

The data was analysed focusing on how a farm is linked to the local or distant territory, what territorial resources it uses, in what way and what are the outcomes at the farm and territorial level. Once the TF profiles of individual farms were reconstructed and TF dimensions identified, the authors from the three countries discussed the emerging findings and compared the different meanings and manifestations of territorial relationships which help SFs to consolidate their position in the context of natural, social and economic systems. Ultimately, we developed and agreed upon four key dimensions of TF: natural resources and assets, integrated landscape, social ties, and economic ties.

2.1. Territorial fitting: four key dimensions

The concept we propose has four primary dimensions, and these can be used to determine whether a farm has been territorially fit. Each of the dimensions can vary in intensity, and we note that in some cases the role of a dimension may be gradually diminishing. Furthermore, not all dimensions were prominent in all cases, with some farms exhibiting a more pronounced reliance on local natural resources, while others made active use of social ties, etc. Crucially, not all farmers perceive TF as an explicit strategy or a part of other strategies (e.g. production, marketing, livelihood maintenance), though their actions have the consequence of making the farm viable and sustainable in a particular location.

2.2. Natural resources

This dimension of TF largely deals with the physical location of the farm in the surrounding natural environment and the ways farmers make active use of the natural resources at hand to carry out and improve on-farm activities. According to our analysis, these resources can be divided into broader groups related to local (i) fauna, (ii) flora, (iii) soil qualities, (iv) water availability, and (v) topography. These different types of natural resources can be used either separately or in combinations. We note that in the farmers’ narratives the distinction between natural and human-made nature is diffuse, as there are continuous influences of human activity on the way the natural environment presents itself. Thus, in our conceptualisation of TF, we speak of natural resources as ones that can also originate from human intervention.

The farms analysed often strongly link into the local specificity of their physical positioning and surrounding. Several of them manage more than one plot, which allows farmers to adapt the choice of crops and principles of crop rotation to the characteristics of each individual field [e.g. RR15SF01³, RR18SF27]. Through trial and error, these farmers have accumulated knowledge that allows them to make use of the specific properties of their land not just to grow crops but also to protect from natural and human-made hazards thereby increasing the resilience of farms.

A telling example of the composite use of natural resources is a farm in the Pierīga region [RR15SF01] where hedges and the micro-landscape surrounding the farm are used as protection from winds. These farmers also purposefully take advantage of the storks nesting in territory and rely on them to repel hawks thereby helping to protect free-ranging chickens grown on the farm. Water is collected from the nearby current and rainfall. Another Latvian farm [RR15SF25] uses the nearby amelioration ditch to ensure their water supply. A typical way of using natural resources and assets is represented by taking account of the local soil qualities in determining the choice of varieties to be grown on the farm - for instance, in developing olive [RR22SF04] or wine [RR22SF07]

¹ 8 ESU are equivalent to 9600 euros of standard gross margin. See European Commission Statistics Glossary for further details [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:European_size_unit_\(ESU\)](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:European_size_unit_(ESU)).

² To increase the flexibility of the definition in different regions and agricultural sectors, both criteria could be applied independently. Therefore, the farms in the sample could be bigger than 5 ha if they did not exceed 8 ESU, and some farms corresponding to the physical size exceeded 8 ESU.

³ Hereinafter the codes stand for the reference region in which the interviews were conducted (RR15 – Pierīga, RR22 – Alentejo Central, RR18 – Hedmark); and the ID of the SF interview in the given region.

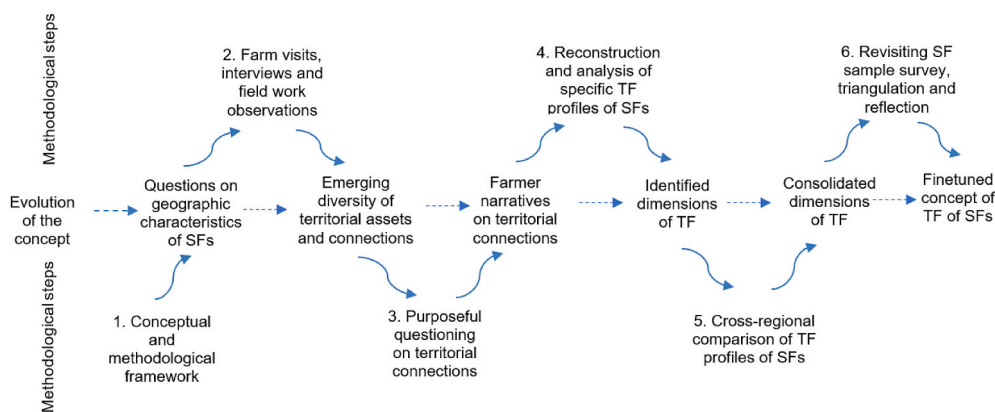


Fig. 1. Methods of exploration and developing the concept of territorial fitting.

production in Alentejo Central. There are also farms that apply biological plant protection methods that are feasible due to the specific qualities of the soil and the observation that surrounding plants repel various pests [RR18SF27].

We stress that the use of natural resources implies not only proactively taking advantage of the available assets, but also creatively adapting to the local ecological conditions of farming. This is exemplified by a Norwegian farm [RR18SF05] located in a ‘wolf designated’ area, as a result of the developments in Norwegian policy regarding the reintroduction of large carnivores. In this case, the main TF challenge is finding a balance between agricultural production and wildlife in the surrounding area. To achieve this, the farmers stopped using outfield grazing but have not yet stopped growing sheep. At the same time, farmers also use wildlife for diversifying their diets by engaging in hunting. For a downsizing farm in Pierīga [RR15SF07] run by an elderly couple, farming is an interface with nature. Every step is linked to observations and interactions with the surrounding natural environment, sometimes even accepting losses – for instance, when a swan prevents the farmer’s cow from accessing the river in order to protect his newborns. The farmers’ care for the wildlife was manifested in taking care of abandoned eagle-owls that they reintroduced into the wild in cooperation with ornithologists.

Another farmer in Pierīga [RR15SF26] has, in her own words, concluded a ‘deal with wild boar and roe deer’ as she leaves surplus potatoes in the nearby forest as wild animal feed to prevent them from coming to damage the cultivated plots. The farmer also gives away 15% of the potato harvest free of charge to hunters who feed forest animals in winter. Another example of creative adaptation is the Norwegian farm [RR18SF37] located in a mountainous area of the region, which allows for a shorter growing season, but offers good conditions for grass production that the farm makes use of. Another Norwegian farm [RR18SF26] has adjusted its farming practices in view of the poor quality of the land by opting to pursue regenerative farming and planning to offer craft-based educational services on the farm.

2.3. Integrated landscape

The integrated landscape dimension illustrates the actions that farms undertake to: (i) forge multifunctionality and interlinkages between various land uses, (ii) make use of public infrastructure, and (iii) create an aesthetic vision of the farm. The integrated landscape dimension emphasises the farm’s active placement in a networked territory and the farmer as a steward of a territory.

Several SFs have chosen to pursue multifunctionality – combining the time invested in food production with additional farm-based activities that capitalise on the landscape. SFs in Alentejo Central diversify their income sources by growing crops, undertaking processing, and being open to tourism [RR22SF01, RR22SF04]. SFs interviewed in

Pierīga and Hedmark typically own both farmland and forested land, in Alentejo Central – silvo-pastoral land areas. This allows farmers to combine the opportunities provided by the various land use types – merging products and profits from several production systems [RR18SF05], using income from forestry for funding agricultural activities [RR15SF03], or complementing olive production with sheep grazing, and growing vegetables on the margins of the olive grove [RR22SF04]. Public infrastructure is an important component for developing SFs TF, as demonstrated by remote farms in Latvia and Norway who use internet marketing and roadside sales to promote their produce [RR15SF25, RR18SF03].

The narratives presented by farmers illustrate that broader land use shifts put new pressures on the historical pathways of individual SFs. Land use shifts include urban sprawl [RR15SF10], centralisation of land ownership, changes related to the introduction of new large-scale infrastructure projects [RR15SF10], rewinding programmes [RR18SF05], etc. For example, a farm [RR15SF25] squeezed between the fields of one of the largest and most intensive grain-producing farms in Latvia, is struggling to maintain the eco-diversity of the farm and secure organic production by engaging in cooperation with other local producers. While some SFs struggle with the urbanisation of the surrounding areas, others are fighting the challenges of depopulation and land abandonment [RR15SF26] or dealing with risks caused by afforestation and the growing proximity of wildlife [RR18SF05]. To overcome these challenges, the territorially fit farms tend to adopt an integrated landscape approaches where decisions are informed not only by skilful use of unique local properties and public infrastructure but are also inspired by an aesthetic vision of a farm and its place in the territory.

2.4. Social ties

The dimension of social ties reveals farmers’ connections to people and communities in the territory in which they operate, and the use of their cultural and social resources, such as knowledge, traditions, habits, etc., to the benefit of their farm’s long-term prospects. We identified three key aspects of how social ties and resources are integrated in SFs strategies of TF: (i) use of local and tacit knowledge, (ii) social support and barter, and (iii) connection to markets.

Most of the interviewed farmers are locals in that they originate from the region in question or have been living and working there for an extended period. Many have taken their farm over from their parents and continue the family tradition of farming that in some cases [RR15SF10; RR18SF37] has been maintained for several generations. This long farming experience in the same place and transfer of a farm within a family often involves the development, transfer and use of local and tacit knowledge in a way that strengthens the farm’s resilience. For example, a farmer in Alentejo Central [RR22SF01] innovates in his

inherited farm respecting the regional traditions and incorporating knowledge on production practices, particularly irrigation, which have evolved over generations. Application of local knowledge is linked to the maintenance of regional agricultural traditions and farming identities. A farmer from Borba area [RR22SF04] has taken over the family-owned olive farm and is strongly committed to maintaining the tradition of olive production in the region and the regional identity built around olive production.

Family and neighbourhood ties are often crucial for the operation of SFs as they are used to ensure the necessary production resources, such as labour, machinery and animal feed. It is common that family members – especially those living close to the farm, but also more distant ones, and friends and neighbours are mobilised as a labour force on a regular basis or in the peak periods of planting and harvesting, which allows the farm to continue its operations smoothly, without the need for additional labour input. Barter or exchange of products or services is widespread among neighbouring farmers, contributing to the flow of goods or services. In Alentejo Central, informal agreements between family members and neighbours on the use of the land are common: when a landowner cannot use the land, he/she would let others manage it without a formal contract, though often with compensation in kind. Such arrangements are made almost exclusively among people with close social ties. Several Portuguese examples show SFs using several plots ranging from 4 to 10, with only part of those owned by the farmer and the remaining used on the basis of an informal agreement [R22SF04; R22SF07]. Similarly, part-time farmers in Pierīga [RR15SF03] have arranged management of their farmland on a barter basis (involving land, machinery, labour and products) with five neighbouring farms, some of them owned by their relatives. Without this arrangement, it is unlikely that the farm would be able to continue its operations. Another example of barter features an exchange of damaged potatoes for feed in return for manure between neighbours [RR18SF02].

Social ties and products with cultural value allow SFs to access the market. For example, a farmer in Alentejo Central [RR22SF02] is selling in the local market but also at the farm door to friends and families within her social network. A farm in Pierīga [RR15SF01] is selling its surplus predominantly through the family's social networks to neighbours and customers in a nearby town. The farm is relatively well integrated in the local informal market through territorial social relationships. SFs can also use culture-laden products as a form of targeted marketing to reinforce social ties with consumers, both in local and, crucially, in spatially distant markets. For example, a Latvian sheep farm [RR15SF25] is selling traditional Latvian woollen socks in foreign premium markets, mostly targeting the Latvian emigrants. A Norwegian farmer [RR18SF03] is selling design products made of fleece from heritage breed sheep, targeting the capital city.

Population dynamics in the regions we looked at required farmers to develop or adapt their social strategies of TF. For instance, many rural territories have been experiencing depopulation that affects rural and farming communities. Other territories, in turn, experience an influx of new permanent or temporary residents (e.g. expansion of peri-urban territories or formation of resort towns). Farmers were to find their place in these new territorial social configurations. For instance, to survive in a fast growing peri-urban territory, a farmer in Pierīga [RR15SF10] tries to establish and strengthen links with new residents, his potential customers in the territory, and to defend his interests in the local power structures, which are frequently biased in favour of urbanisation in the region. A farmer in Hedmark [RR18SF02] emphasises his role as a mediator of practical knowledge about food production to an increasingly urbanised population. There is also a trend of new-comers with a non-farming or urban background starting agricultural activities who attempt to introduce practices suited to the locality. For instance, a farming couple in Hedmark [RR18SF26] represents such a “back to the land” self-sufficiency movement in Norway. As their intention is to practice regenerative agriculture and to avoid integration in the conventional farming system, connecting to experienced farmers

and developing a solid social network are crucial for accessing the necessary resources and markets.

2.5. Economic ties

The dimension of economic ties focuses on those links between the farm and other agents that have to do with the labour and outlet markets of different scales. We have identified four types of economic ties among the surveyed SFs: (i) informal/direct economic relations with local customers, (ii) off-farm employment, (iii) family labour and employment of farm workers, and (iv) engagement in farmer cooperatives.

Due to their small size and frequently limited volume of production, many of the analysed SFs were engaged in direct marketing via short supply chains. As demonstrated by a Latvian farm [RR15SF25], most of the produce is sold by the farmer herself at local markets, fairs, and an on-farm shop, building on long-standing relations with permanent clients based on proven quality and trust. In a similar vein, a Latvian farm [RR15SF10] sells milk and other dairy and farm products exclusively to regular customers. Another farm in Pierīga [RR15SF07] sells some irregular surplus to family members, neighbours, and other local customers.

Direct sales channel is also used by a niche producer in Portugal [RR22SF07] who sells the farm's produce to neighbours and week-end visitors, who buy products for themselves and their relatives and friends. A SF in Hedmark sells surplus sheep (live animals) without a formal agreement to family and friends for personal consumption [RR18SF03]. Aside from private clients, the local market acts as an important platform for developing and maintaining economic ties [RR18SF05] – one of the Portuguese farms [RR22SF01] sells 65% or the production in the local market.

Off-farm employment represents another mechanism for developing economic ties as part of TF. It is quite common that one or several of the SF's household members are taking on full or part-time or seasonal work off the farm in the locality to supplement their income. In a part-time farm in Pierīga [RR15SF03] both the farmer and her husband have other jobs and they each spend an average of 2 h a day on farming activities. In Norway, the owner of a multifunctional SF [RR18SF05] has multiple sources of income, being active in organisational paid work off the farm. For another Norwegian farm specialising in dairy production [RR18SF37], the husband works full-time on the farm, while his wife works off-farm, which is identical to the situation of an SF re-established by a young couple [RR18SF26], where the wife has a tourism business.

While off-farm employment and use of voluntary work of family members is a much more common trait of SFs, there are also selected examples of developing economic ties by becoming an employer for one or several farm workers. In Portugal, an owner of an intensive multifunctional farm [RR22SF01] employs an external worker full-time during the summer.

Engagement in farmer cooperatives can also be used to develop economic ties, allowing SFs to reach a wider sales market collectively. While formal cooperation is not a common practice in Latvia, especially among SFs, it is quite well-established among the surveyed farmers in Portugal and Norway. In Alentejo Central, a farm [RR22SF01] is engaged in a regional box scheme representing a collective action by different local small farmers, while a specialized olive producer [RR22SF04] delivers all his produce to the local olive growers' cooperative. The linkage to the local cooperative materialises the TF, as the farm both makes use of the locally anchored producer network and contributes to its dynamics and survival. In Norway, a sheep and goat farmer [RR18SF05] delivers meat to the national meat co-operative, while keeping some for sales in a local store and directly on the farm. Another Norwegian dairy and meat farmer [RR18SF37] takes pride in delivering all his products to the national cooperatives. This leaves fewer links to local markets, though he has engaged in formalized cooperation with a neighbouring farmer, encouraged by a special policy measure aimed at dairy farms.

3. Discussion

Several commonalities emerge across the farms regarding TF: (i) cohabitation with nature and local community, (ii) use of farm-based and locally available natural and social resources, (iii) networking as a means of production input assurance and marketing, (iv) marketing at various scales (local, regional, international). Overall, it appears that TF is primarily related with nature- and land-based resources and processes in which agricultural production is embedded. On the other hand, TF presumes establishing connections with other places, markets, and communities.

There are numerous manifestations and varying levels of TF among SFs with different outcomes. For some, TF may be a very special construction of farm history, personal and family biography, and community traditions. In this case, TF is very reliant on tacit, informal and local knowledge, reciprocity with other farmers and community members, as well as a strong attachment to the land and the natural environment. The specific natural, social, and economic qualities are usually translated into a resilient farming model through farmers' local knowledge and skill (Sūmane et al., 2018). The lived experiences and social connections in the community also work towards strengthening the farm's TF by transmitting local knowledge about the landscape, nature, and culture.

In other cases, TF manifests itself by adopting land use patterns that are suited to regional soil and climatic characteristics, or by entering emerging or existing niche markets to make use of the farm's location and entanglement in local networks of exchange. This version of TF goes hand in hand with targeted economic collaborations (in particular – exchange of production inputs with other farmers in the vicinity to increase the effectiveness of production. Furthermore, from an economic perspective, TF is often combined with the availability of family labour input, without which the adopted business model would be difficult to maintain.

The TF concept draws attention to farmers' agency and ingenuity in the processes of farm adaptation and innovation. As a result, the farmer may articulate and combine various dimensions of TF, and this might differ from one innovation to another. Our study allows us to identify the interplay and synergies between the dimensions of TF. For example, social ties may work together with the integrated landscape approach by helping farmers to cultivate multiple plots on a barter basis. Social ties may also help to strengthen economic ties by easing access to markets through producer and consumer networks. Economic ties, in turn, invigorate natural resource use at times when SFs appeal to niche markets and innovate in biodiversity products (Kruijssen et al., 2009). However, the dimensions of TF do not always enhance each other as evidenced by the difficulties that some SFs experience in terms of land use. In this case, SFs develop their TF by emphasising other dimensions.

Adopting a territorial approach also brings forward the context and the interplay of multiple economic, socio-cultural, environmental, and institutional drivers in each specific location. It makes it possible to deal with and understand complex and multi-level governance mechanisms (Faludi, 2016) as well as spatial and sectoral policy strategies and tools (Elden, 2010). However, the study suggests that not all farmers use TF as an explicit strategy; on average only 1/3 of the interviewed farmers provided narratives in response to questions about the farm's territorial assets and connections.

The analysis allows us to frame TF in a rural development context. TF is related not only to food production on SFs but also to a diverse range of other activities (e.g. tourism, environmental protection, small scale and artisanal food processing, etc.). Thus, while TF concerns sustainable use of various resources in a territory, it also enhances local labour relations, strengthens social ties and value chain relationships. TF is an activity which presumes a farmer's agency, but also relies upon the maintenance of relationships with other actors and territories. Furthermore, the analysed small farms were benefiting from, and making use of, their surroundings in ways a typical heavily intensified farm would not. TF may also be observed among large farms, but the

difference in size does not necessarily mean that they are more territorially fit (in terms of ecological and social sustainability), as shown in many instances of large grain producing and energy farms (Le Billon and Sommerville, 2017).

In addition to its potential analytic value, TF may assist in conceptualising politically sensitive matters, such as (i) largely uncontrolled and market-driven farm concentration, which tends to squeeze out small producers, (ii) developments in peri-urban areas where urban expansion and influx of new populations change land use patterns, (iii) depopulation in remote areas which depletes the social fabric and restricts the knowledge bases, labour availability and markets for smart use of territorial resources. In addition, the political relevance of the TF concept could be found in relation to the provision of environmental and climate public goods through small-scale farming and processing. Some TF stories suggest that SFs ensure local level agri-environmental resource balance in a clever and coherent way (e.g. use of soil qualities, plant varieties, and other resources) to produce a variety of products and goods for farm use and exchange. In their attempts to introduce the best strategies for farming on a particular plot, several farms have created solutions that are very close to those described as the circular economy. There are examples of TF enabling SFs activities related to nature conservation and biodiversity protection, and stewarding micro-landscapes and micro-level ecosystems, making an invaluable contribution to climate change adaptation and mitigation, as well as the delivery of environmental-climate public goods.

4. Conclusion

Territorially based farming strategies are necessary for unfolding the potential of SFs in food provision and territorial development, but they are currently insufficiently researched. Based on an exploratory study, we have proposed and elaborated the concept of territorial fitting for the analysis of the activities of SFs in local and regional food chains, and in wider food and socio-ecological systems.

In terms of the 1st background research question, we tentatively conclude that TF differs from other territorial approaches by emphasising the role of the farmer in shaping a farms' territorial strategies and combining local and global resources. In this perspective, TF is a farmers' skill to navigate and locate their farming activities in a territorial context at various scales.

Regarding the 2nd background research question, we provided examples of empirical manifestations of TF from different contexts, illustrated a wider diversity of TF, and elaborated on the main dimensions of TF (natural resources, integrated landscape, social ties, and economic ties). We observed that TF of farms can vary depending on the context and prominence of these dimensions.

Concerning the 3rd background research question, the study suggests that TF may generate positive sustainability outcomes by: (i) improving integration in niche markets; (ii) supporting micro-management of nature and eco-systems; (iii) improving the multi-functional profile of farms; and (iv) establishing new territorial linkages in terms of market engagement, social connections and environmental functions of SFs.

Furthermore, TF allows us to highlight that SFs are challenged by different processes taking place in a territory: land contestation, expansion of large farms, urban sprawl and uneven development of public infrastructure.

Our approach to the identification and articulation of TF is characteristic of exploratory studies that attempt to conceptualise emerging findings and our findings are still tentative. The concept, therefore, remains somewhat diffuse and further empirical and theoretical research is needed to better understand the nature of TF, explore its relevance for SFs performance and contribution to food and nutrition security. Nonetheless, we argue that TF has both analytical and political value.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The research is funded by the European Commission, It carried out within the framework of the EU H2020 research project SALSA, Grant Agreement 677363.

Annex A. General characteristics of the surveyed small farms

Characteristics of the sample	Regions				TF in-depth sample (total for all regions)	
	Alentejo Central	Hedmark	Pieriga	All		
Interviews (N)	38	31	30	99	16	
Age	Average	57,3	52,2	56,5	55,5	53,4
	Min	28	22	21	21	40
	Max	82	72	81	82	75
Gender	Female	16%	42%	50%	34%	37,5%
	Male	84%	58%	50%	66%	63,5%
Education	Up to primary only	45%	0	3%	18%	0
	Up to secondary only	29%	13%	13%	19%	37,5%
	Technical or vocational training only	5%	32%	43%	25%	37,5%
	University Degree	21%	55%	40%	37%	25%
Farm size	Total average (ha)	3,75	11,01	14,57	9,3	12,1
	UAA average (ha)	3,07 (N = 38)	2,72 (N = 15) ^a	4,99 (N = 22)	3,56 (N = 75)	3,18 (N = 10)
Turnover (EUR)	6010 (N = 33)	54,729 (N = 30)	6290 (N = 27)	22,333 (N = 90)	24,824 (N = 15)	
Dedication to farming	Full time farming	55%	52%	66%	57%	81%
	Farming >50% of work time	11%	10%	10%	10%	6%
	Farming <50% of work time	32%	6%	21%	20%	6%
	Hobby farming	3%	32%	3%	12%	6%

^a We indicate the number of farms from which the value was calculated for those variables with the response rate lower than 100%.

Annex B Characteristics of the sample of small farms selected for in-depth analysis

Characteristics of the sample	Value	
Regional origin	Yes (N)	14
	No (N)	2
Farm size	Total average (ha)	12,1
	UAA average (ha)	3,18 (N = 10)
	Number of plots per farm average	6,7 (btw. 2 and 40)
Distance to the urban centre	0–5 km (N)	2
	5–10 km (N)	1
	10–20 km (N)	5
	20–30 km (N)	2
	>30 km (N)	5
Labour	Permanent paid family labour (N)	13
	Permanent paid non-family labour (N)	3
	Occasional non-paid family labour (N)	12
	Occasional paid non-family labour (N)	6
Source of farm income	Agricultural activities	16
	Non-agricultural activities	7
	Average income from agricultural activities (av. % from total farm income)	85
Market access	Formal market channels	34
	Farmer markets (N)	9
	Cooperatives (N)	1
	Wholesaler (N)	1
	Products given as gift (N)	11
Social networks	Membership in farmer organisations	12
	Assistance from neighbours and relatives	4
	Yes (N)	12
Risks	Natural	4
	Climate and weather (N)	5
	Pests (N)	3
	Wild animals (N)	2
	Urbanisation (N)	1
	Land use (intensive farming, pollution) (N)	4
	Poor infrastructure (N)	2
Economic	2	
Customer demand, access (N)	2	
Costs of inputs (N)	1	
Politics, regulations, access to funding (N)	7	

Annex C. Examples of territorial fitting profiles of small farms in Latvia, Portugal and Norway

The semi-subsistence farm R15SF01 is located in the Pierīga region (Latvia), and is a small (3.8ha) agricultural holding managed by a pensioner couple. The farmers produce potatoes, vegetables, fruit, eggs, mostly for self-consumption, and 40% of the farm's total output is sold through family networks to neighbours and customers in a nearby town. This suggests that the farm is relatively well integrated in the local informal market mediated through social relationships and territorial ties. The farm and its activities are well-embedded in the territory and landscape: farmers manage a number of plots and diverse crops, and apply methods of crop rotation learnt through practice and accumulated experience; hedges and the micro-landscape surrounding the farm protect it from winds; water is collected from the nearby current and rainfall; storks nesting in the farm's territory repel hawks thereby helping to protect free-ranging chicken. Nature is a strong component in this farm's territorial profile and natural qualities are translated into a resilient farming model through farmers' local knowledge and skills. The use of distant resources is very limited.

R15SF25 is a niche market-oriented diversified small farm managed by a female farmer. The farm produces potatoes, seedlings, eggs, vegetables, sheep and sheep products (meat, wool, knitwear). Most of the products are sold by the farmer in local markets, fairs and an on-farm shop. However, some products also reach consumers in other regions of the country (on average 20%) and are even exported (c.a. 10% of seedlings and wool products) through internet sales and mobile parcel services. Some of the products (e.g. Christmas gift socks) are meant for premium markets and are sold to customers (mostly Latvian emigrants) in cities such as Dublin, London and New York. While the farm's market geography is extensive, the farm itself is territorially well fit in the given land and agro-ecological conditions. The farmer practices extensive sheep grazing, cultivates perennial grassland, uses little artificial fertiliser, uses water from the nearby amelioration ditch, and considers conversion to organic production. However, the farm is surrounded by one of the largest grain-producing farms in Latvia (6000 ha). While this makes the relationship between the two farms complicated, the farmer is involved in barter exchange with the big neighbour, and also networks with a small nearby brewery which supplies mash (by-product in beer making) for sheep feed in exchange for meat and vegetables. The TF in this farm is supportive of niche production, resource-saving agro-ecological methods, and technically and socially advanced marketing (Facebook, mobile parcel services, export).

In the Alentejo Central region in Southern Portugal there are different types of small farms. R22SF01 is one of the smallest, with 1ha. This farm is located in the area surrounding Redondo - a small city close to the regional centre Évora. It is an intensive multifunctional farm, producing different vegetables and fruits. The farmer has taken the farm over from his parents, and works full-time on the farm. The farm provides 50% of the food consumed in the household. In addition, the farmer invests in short supply chains: 65% of the marketed production is sold in the local market and 35% through a regional box scheme, mainly directed at the urban consumers from Évora. A small part of the production is processed on the farm and sold together with the unprocessed products. The TF of this farm is particularly expressed in the labour integration where family members, living close to the farm, provide crucial support, and in the collective action for the box scheme, which is put together jointly by different local small farmers. Finally, TF is expressed in the selection of products. The farmer is innovating and turning the farm into a commercial unit, but he still maintains the diversity of products that SFs in the region have traditionally produced, incorporating knowledge on production practices, particularly irrigation, which have evolved over generations.

The small farm R22SF04 is a specialized olive producer (4.5 ha), and the farmer inherited the farm from his parents. The farm is located in the eastern part of Borba, where the soil is favourable for olive production. The farm also produces other products, both for the market and personal consumption. This farmer is working full time on the farm, and there is also labour support from the family. This farmer is investing in specialising and intensifying olive production. He has converted 1.5ha of the formerly rain-fed 4ha olive grove into irrigated land, and plans to convert a larger area. His olive output is distributed via the local olive growers' cooperative, where it is processed and sold. Only a small share of the oil is kept for personal consumption. This farmer is strongly committed to maintaining the tradition of olive production in the region, and is committed to maintaining the regional identity. The linkage to the local cooperative exemplifies his TF, as he makes use of the locally anchored producer network and contributes to its dynamics and survival. The complementarity with sheep grazing under the rain-fed olive trees, and vegetables in the margins of the olive grove, is also strongly anchored in the traditional multifunctionality of small farms in this region.

In the Hedmark region, the two farms express differences in their TF profiles.

RR18SF37 is a small dairy farm in formalized co-operation with a neighbouring farmer. The farm is located in a mountainous area of the region, meaning a shorter growing season, but good conditions for grass production. The cooperation was encouraged by a special policy to improve the economic situation of small farms. The farmer is in his mid-fifties, 7th generation family farmer and has lived in the area most of his life. He took over the farm in the early 1980s to keep the farm in the family and provide an opportunity for one of his daughters to continue farming. He is educated as an agronomist and mechanic, meaning he can do a lot of farm maintenance himself, and recently he installed a milking robot to save time. The farm produces milk and meat. The farmer takes pride in delivering everything to the national dairy and meat cooperatives, hence the farm provides little food for the farmer's household. It is a source of income, but also an important site for producing traditional farming values, cultural landscapes and maintain agricultural soils. The farmer believes that the farm has a perfect territorial fit. Expanding the farm with more animals would mean building a new barn, renting or buying land, and increased transport and labour costs, and additional risk. While the farm is well adapted to its natural environment, it has little potential (or incentive) for growth or other developments. The farm is also well-adapted to the conventional value chain, leaving few bonds with the local markets or community.

RR18SF37 is a very small farm reestablished by a young couple who recently moved to the area with their child. Both come from a military background and now want to settle down and be 100% self-sufficient in food provision from the farm. They have started with sheep, pigs and chickens and are developing a vegetable garden. The goal is a regenerative farming practice. The farm had been closed down for some time and not maintained, hence a lot of time is spent developing the land and buildings (e.g. rebuild the barn into a workshop for teaching traditional crafts and sell educational services to the municipality). The husband works full-time on the farm, while the wife owns a tourism business. The farm is currently completely disconnected from the food value chain. They currently only have a surplus of eggs, which they sell to the neighbours. The plan is to produce more surplus for informal and local sales. This farming couple represent a new type of farming style in Norway, a self-sufficiency movement "back to the land". Their intention is to develop the best possible TF for their production, but their success might be hampered by the quality of land and their resistance to integration in the conventional farming system (e.g. in needing support, knowledge, etc.). Newcomers do nevertheless stimulate development in regions suffering from aging and declining populations.

References

- Alexandri, C., Luca, L., Kevorchian, C., 2015. Subsistence economy and food security – the case of rural households from Romania. *Procedia Economics and Finance* 22, 672–680. [https://doi.org/10.1016/S2212-5671\(15\)00282-8](https://doi.org/10.1016/S2212-5671(15)00282-8).
- Ash, J., 2020. Post-phenomenology and space: a geography of comprehension, form and power. *Trans. Inst. Br. Geogr.* 45 (1), 181–193. <https://doi.org/10.1111/tran.12331>.
- Augstburger, H., Käser, F., Rist, S., 2019. Assessing food systems and their impact on common pool resources and resilience. *Land* 8 (4), 71. <https://doi.org/10.3390/land8040071>.
- Berglund, B.E., Kitagawa, J., Lagerås, P., Nakamura, K., Sasaki, N., Yasuda, Y., 2014. Traditional farming landscapes for sustainable living in scandinavia and Japan: global revival through the satoyama initiative. *Ambio* 43 (5), 559–578. <https://doi.org/10.1007/s13280-014-0499-6>.
- Bowen, S., 2011. The importance of place: Re-territorialising embeddedness. *Sociol. Rural.* 51 (4), 325–348. <https://doi.org/10.1111/j.1467-9523.2011.00543.x>.
- Brunori, G., Grando, S., Galli, F., Fastelli, L., Di Iacovo, F., 2019. Analytical framework. Retrieved from. http://www.salsa.nevora.pt/wp-content/uploads/2019/08/D1.2_analytical_frameworkJuly2019_160819.pdf.
- Davidova, S., 2011. Semi-subsistence farming: an elusive concept posing thorny policy questions. *J. Agric. Econ.* 62 (3), 503–524. <https://doi.org/10.1111/j.1477-9552.2011.00313.x>.
- de Herde, V., Baret, P., 2018. Alternative trajectories of dairy farmers reveal their embeddedness in the mainstream dairying and articulation with structural dynamics. In: 13th European International Farming Systems Association: Farming Systems: Facing Uncertainties and Enhancing Opportunities. <https://dial.uclouvain.be/pr/boreal/en/object/boreal%3A214255>.
- de Roest, K., Ferrari, P., Knickel, K., 2018. Specialisation and economies of scale or diversification and economics of scope? Assessing different agricultural development pathways. *J. Rural Stud.* 59, 222–231. <https://doi.org/10.1016/j.jrurstud.2017.04.013>.
- Denzin, N.K., Lincoln, Y.S., 2003. *Collecting and Interpreting Qualitative Materials*, second ed. SAGE Publications.
- Elden, S., 2010. Land, terrain, territory. *Prog. Hum. Geogr.* 34 (6) <https://doi.org/10.1177/0309132510362603>, 799–81.
- Eurostat, 2018. Farms and farmland in the European Union - Retrieved from statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Farms_and_farmland_in_the_European_Union_-_statistics#The_evolution_of_farms_and_farmland_from_2005_to_2016.
- Faludi, A., 2016. The poverty of territorialism: revisiting European spatial planning. *disP - The Planning Review* 52 (3), 73–81. <https://doi.org/10.1080/02513625.2016.1235886>.
- Granovetter, M., 1985. Economic action and social structure: the problem of embeddedness. *Am. J. Sociol.* 91 (3), 481–510. www.jstor.org/stable/2780199.
- Grivins, M., Tisenkopfs, T., 2018. Benefitting from the global, protecting the local: the nested markets of wild product trade. *J. Rural Stud.* 61, 335–342. <https://doi.org/10.1016/j.jrurstud.2018.01.005>.
- Hammersley, M., Atkinson, P., 1995. *Ethnography: Principles in Practice*. Routledge.
- Hinrichs, C.C., 2000. Embeddedness and local food systems: notes on two types of direct agricultural market. *J. Rural Stud.* 16 (3), 295–303. [https://doi.org/10.1016/S0743-0167\(99\)00063-7](https://doi.org/10.1016/S0743-0167(99)00063-7).
- Hubbard, C., 2009. Small farms in the EU: how small is small?. In: 111th EAAE-IAAE Seminar 'Small Farms: Decline or Persistence'. University of Kent, Canterbury, UK, 26–27th June 2009.
- Jessop, B., Brenner, N., Jones, M., 2008. Theorizing sociospatial relations. *Environ. Plann. Soc. Space* 26 (3), 389–401. <https://doi.org/10.1068/d9107>.
- Jones, M., 2009. Phase space: geography, relational thinking, and beyond. *Prog. Hum. Geogr.* 33, 487–506. <https://doi.org/10.1177/0309132508101599>.
- Kalantaridis, C., Bika, Z., 2006. Local embeddedness and rural entrepreneurship: case-study evidence from cumbria, england. *Environ. Plann.* 38, 1561–1579. <https://doi.org/10.1068/a3834>.
- Koopmans, M.E., Rogge, E., Mettepenningen, E., Knickel, K., Šūmane, S., 2018. The role of multi-actor governance in aligning farm modernization and sustainable rural development. *J. Rural Stud.* 59, 252–262. <https://doi.org/10.1016/j.jrurstud.2017.03.012>.
- Kruijssen, F., Keizer, M., Giuliani, A., 2009. Collective action for small-scale producers of agricultural biodiversity products. *Food Pol.* 34, 46–52. <https://doi.org/10.1016/j.foodpol.2008.10.008>.
- Labarthe, P., Laurent, C., 2013. Privatization of agricultural extension services in the EU: towards a lack of adequate knowledge for small-scale farms? *Food Pol.* 38 (C), 240–252. <https://doi.org/10.1016/j.foodpol.2012.10.005>.
- Le Billon, P., Somerville, M., 2017. Landing capital and assembling 'investable land' in the extractive and agricultural sectors. *Geoforum* 82, 212–224. <https://doi.org/10.1016/j.geoforum.2016.08.011>.
- Lefebvre, H., 1991. *The Production of Space*. Blackwell, Oxford.
- Madelrieux, S., Bergeret, A., Fillion, L., 2018. Forms of territorial embeddedness in dairy value chains. In: Case of the Chartreuse Massif (French Alps): Geographical and Historical Perspectives. 13th European International Farming Systems Association: Farming Systems: Facing Uncertainties and Enhancing Opportunities. In: http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2018/Theme5_Madelrieux.pdf.
- Martin, D.G., 2003. Place-framing' as place-making: constituting a neighborhood for organizing and activism. *Ann. Assoc. Am. Geogr.* 93 (3), 730–750. <https://doi.org/10.1111/1467-8306.9303011>.
- Migliore, G., Caracciolo, F., Lombardi, A., Schifani, G., Cembalo, L., 2014. Farmers' participation in civic agriculture: the effect of social embeddedness. *Cult. Agric. Food Environ.* 36 (2), 105–117. <https://doi.org/10.1111/cuag.12038>.
- Mincey, D., 2011. Subsistence and sustainability in post-industrial europe: the politics of small-scale farming in europeanising Lithuania. *Sociol. Rural.* 51, 101–118. <https://doi.org/10.1111/j.1467-9523.2011.00530.x>.
- Munoz-Rojas, J., Bartolini, F., Maye, D., von Münchhausen, S., Noe, E., Pinto-Correia, T., Thorsoe, M.H., Vergamini, D., 2018. The role of territorial conditions in influencing the sustainability of farming systems and strategies across Europe: a comparative analysis. In: 13th European International Farming Systems Association: Farming Systems: Facing Uncertainties and Enhancing Opportunities. <https://pdfs.semanticscholar.org/c2ae/92cd920829b00ca65401dc59f28ccc40b614.pdf?ga=2.26434753> 2.2097681648.1566767844-1321452598.1565940117.
- Pinto-Correia, T., Almeida, M., Gonzalez, C., 2017. Transition from production to lifestyle farming: new management arrangements in Portuguese small farms. *Int. J. Biodivers. Sci. Ecosyst. Serv. Manag.* 13 (2), 136–146. <https://doi.org/10.1080/21513732.2017.1329753>.
- Primdahl, J., Swaffield, S. (Eds.), 2010. *Globalization and Agricultural Landscapes. Change Patterns and Policy Trends in Developed Countries*. Cambridge University Press, Cambridge.
- Ramirez, M., Bernal, P., Clarke, I., Hernandez, I., 2018. The role of social networks in the inclusion of small-scale producers in agri-food developing clusters. *Food Pol.* 77, 59–70. <https://doi.org/10.1016/j.foodpol.2018.04.005>.
- Raymond, C.M., Bieling, C., Fagerholm, N., Martin-Lopez, B., Plieninger, T., 2016. The farmer as a landscape steward: comparing local understandings of landscape stewardship, landscape values, and land management actions. *Ambio* 45 (2), 173–184. <https://doi.org/10.1007/s13280-015-0694-0>.
- Renting, H., Rossing, W.A.H., Groot, J.C.J., van der Ploeg, J.D., Laurent, C., Perraud, D., Stobbe, D.J., van Ittersum, M.K., 2009. Exploring multifunctional agriculture. A review of conceptual approaches and prospects for an integrative transitional framework. *J. Environ. Manag.* 90 (2), 112–122. <https://doi.org/10.1016/j.jenvman.2008.11.014>.
- Ricciardi, V., Ramankutty, N., Mehrabi, Z., Jarvis, L., Chookolingo, B., 2018. How much of the world's food do smallholders produce? *Global Food Secur.* 17, 64–72. <https://doi.org/10.1016/j.gfs.2018.05.002>.
- Sage, C., 2003. Social embeddedness and relations of regard: alternative 'good food' networks in south-west Ireland. *J. Rural Stud.* 19 (1), 47–60. [https://doi.org/10.1016/S0743-0167\(02\)00044-X](https://doi.org/10.1016/S0743-0167(02)00044-X).
- Salvioni, C., Esposito, L., Henke, R., Rondinelli, V., 2009. Diversification strategies in small farms in Italy. In: 111th EAAE-IAAE Seminar 'Small Farms: Decline or Persistence'. University of Kent, Canterbury, UK, 26th–27th June 2009.
- Samberg, L.H., Gerber, J.S., Ramankutty, N., Herrero, M., West, P.C., 2016. Subnational distribution of average farm size and smallholder contributions to global food production subnational distribution of average farm size and smallholder contributions to global food production. *Environ. Res. Lett.* 11, 124010. <https://doi.org/10.1088/1748-9326/11/12/124010>.
- Shucksmith, M., Rønningen, K., 2011. The Uplands after neoliberalism? The role of the small farm in rural sustainability. *J. Rural Stud.* 27, 275–287. <https://doi.org/10.1016/j.jrurstud.2011.03.003>.
- Šūmane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., Des Ios Rios, T.I., Rivera, M., Chebach, T., Ashkenazy, A., 2018. Local and farmers' knowledge matters! How integrating informal and formal knowledge enhances sustainable and resilient agriculture. *J. Rural Stud.* 59, 232–241. <https://doi.org/10.1016/j.jrurstud.2017.01.020>.
- Thrift, N., 2003. Space: the fundamental stuff of human geography. In: Clifford, N., Holloway, S., Rice, S.P., Valentine, G. (Eds.), *Key Concept in Geography*. SAGE Publishing, London, pp. 95–107.
- Tisenkopfs, T., Šūmane, S., Kunda, I., Pilvere, I., Zēverte-Rivža, S., Stokmane, I., 2015. *Latvijas Mazo Saimniecību Dzīvotspēja*. Baltic Studies Centre, Riga.
- Torre, A., Traversac, J.B., 2011. Introduction. In: Torre, A., Traversac, J.B. (Eds.), *Territorial Governance. Local Development, Rural Areas and Agrofood Systems*. Springer Verlag, Heidelberg & N, York ix-xxxiii.
- van der Ploeg, J.D., Jingzhong, Y., Schneider, S., 2012. Rural development through the construction of new, nested, markets: comparative perspective from China, Brazil and the European Union. *J. Peasant Stud.* 39, 133–173. <https://doi.org/10.1080/03066150.2011.652619>.
- Veveris, A., Kalis, I., 2011. The impact of EU agricultural policy on the competitiveness of the farms in Latvia. *Ekonomika ir Vadyba* 16, 452–458. https://llu.lv/conference/Research-for-Rural-Development/2015/LatviaResearchRuralDev21st_volu me2-161-168.pdf.