Territorial fitting of small farms

Talis Tisenkopfs[a], Sandra Šūmane[b], Anda Ādamsone-Fiskoviča[b], Miķelis Grīviņš[b]

[a]*Senior researcher, Baltic Studies Centre, Riga, Latvia, talis.tisenkopfs@lu.lv*

[b]*Researcher, Baltic Studies Centre, Riga, Latvia, sandra.sumane@gmail.com; anda@lza.lv; mikelis.grivins@gmail.com*

Abstract: *This paper proposes a novel concept of territorial fitting/fitness (TF) 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, delimitate the scope and meanings of the concept in relation to other relevant concepts, such as farm structure, land use, territorial development and governance, social embeddedness, food chains, natural resources, agri-environmental public goods and urban-rural linkages. Based on an analysis of empirical examples and manifestations of territorial fitting as found in a sample study of 30 small farms (SF) and 10 small food businesses (SFB) in Latvia, we elaborate on key dimensions of TF such as nature, infrastructure, land, social ties and economic networks. The paper aims to uncover empirical diversity and underpin the concept, build a typology of TF and explore the links between territorial fitness of small farms and their resilience and social and economic performance. The concept of territorial fitting/fitness may have potential for further research on the role of small farms in food systems, food security, the delivery of agri-environmental goods, and rural development. The research is carried out within the framework of the EU H2020 research project SALSA (GA 677363).*

Keywords: *small farms, small food businesses, territorial fitting, farmer strategies*

Introduction: Why territorial fitting?

When considering future sustainable agricultural and rural development and food security issues against many dynamic challenges, policy makers and researchers have increasingly been paying attention to small farms (SFs). The multiple contributions of small farms to these aims have started to be better recognised and understood. Small farms play an important role in food production, diversification of rural economy, management of agricultural land, natural resources and landscape (Salvioni et al 2009). They contribute to employment, family income, livelihoods and rural social life (Shucksmith and Rønningen 2011). Through family and social relations small farms are connected with urban residents. Many small farms produce quality products, develop new services and forms of marketing which integrate them in various niche markets (Tisenkopfs et al 2015). Small farms are also linked to the delivery of various environmental goods, such as maintaining biodiversity and preserving the diversity of the rural landscape.

In turn, the decreasing number of small farms point to their vulnerability. The structural tendency of ongoing concentration in European agricultural production has been happening mostly at the expense of smaller farms as the sharpest decrease of the number of farms is in the small holdings group. Agricultural policies, public support measures, market and financial structures that are less supportive to small farms over the long term have been among the principal institutional factors downplaying the role of small farms (Mincyte 2011, Veveris and Kalis 2011, Labarthe and Laurent 2013). At the same time, many small farms demonstrate considerable resilience and have been capable of generating the various social, economic and environmental benefits mentioned above.

Our hypothesis is that small farms' resilience and outputs are linked to their capacity of co-living with a range of local territorial assets. Small farms are typically operating at proximity level, in physical and/or social terms (contrary to bigger farms which are more inclined to be detached from their local contexts and better integrated in large-scale, extra-territorial structures). This proximity involves positioning within, and engaging themselves with, a set of local territorial assets. We propose to call this engaging with local territorial assets 'territorial fitting', and a farm's actual embeddedness in territorial settings – its 'territorial fitness'. While fitting focuses mainly on the processes of territorial adaptation and transformation, the notion of fitness conveys the outcomes of a farm's territorial activities. Territorial fitting relates to the farmer's skill to incorporate and combine territorial factors in the farm's activities, but it also relates to the outcome – how well a farm is accommodated in a given territory, society and markets. Territorial fitness is mainly an outcome-related category; it describes the state and degree to which a farm is accommodated in a territory, markets and communities.

In this paper we aim to explore the empirical diversity and provide evidence of small farms' territorial fitness and its key dimensions and examine the links between the territorial fitness of small farms and their resilience and social, environmental and economic functioning.

Research questions:

1) How can the concept of territorial fitting/fitness be framed and delimited?
2) What are the empirical manifestations, characteristics and key dimensions of TF?
3) How is TF related to the economic and social functioning of small farms?
4) What possibilities does the concept of TF offer for a better understanding of the role of SFs in food and nutrition security and the provision of environmental and social goods?

Conceptual framework: Framing territorial fitting of small farms

Territorial fitting finds expression through an aligned set of various farming practices that are grounded in local / territorial resources and conditions (natural resources, natural conditions, land resources, biodiversity, infrastructure, local knowledge, community ties and others) and that valorise these resources for the production of food, delivery of agri-environmental-climate benefits and social goods (including community building, cohesion, strengthening rural-urban links, maintenance of traditions, local knowledge, farmers' empowerment).

TF deals with territory at various scales and boundaries, starting with farm-level boundaries (which are delimitated by farm land in possession or rent) and continuing with natural, community, societal and administrative boundaries. These territories are like expanding circles surrounding a SF and they embrace natural, social and technical artefacts and relations. Territory is not a fixed category; there are different types of territories and regions in which small farms and food businesses operate: peri-urban territories close to metropolitan centres, remote and sparsely populated areas, regions of intensive agricultural production and high specialisation, etc. These kinds of territories impose different conditionality on how SFs can operate and valorise their specific farm-based resources. Since SFs produce not only for self-consumption but also engage in markets, the latter have also varied territorial scales and formations from very localised and informal community economies (based on sharing, non-monetary exchange and barter) to proximity or regional markets to agro-industrial and globalised commodity markets. SFs, depending on their specific territorial arrangements and strategies, are engaged in varied markets – localised and more distant ones.

TF strongly deals with nature- and land-based resources: climate conditions, topography, land and forest resources, natural environment, biodiversity, wild-life, landscape assets, soil qualities – all nature-based assets and processes in which agricultural production is embedded. Infrastructure is also a part of a farm's territorial fitting construction: if a farm is

located in a place with poor hard and soft infrastructure (roads, electricity supply, internet access) it limits the farm's production and marketing capacity.

There is a connection between the concepts of TF and social embeddedness (Granovetter 1985). Whereas social embeddedness emphasises social networks in the operation of production systems and markets (Hinrichs 2000, Sage 2003, Ramirez et al 2018), territorial fitting highlights the importance of local / regional social ties and networks and values and benefits mediated through them (knowledge, advice, support, recognition, social innovation, joint activities, collective arrangements, etc.) in valorisation of locally available natural and territorial resources.

Territorial governance is another concept related to TF. Territorial governance includes managing territorial dynamics through formally and informally coordinated actions (Koopmans et al 2018, Torre and Traversac 2011). TF is a micro-level process through which a farm is adapted to the territory. Actual practices through which TF takes place may be developed within the existing formal and informal rules or bypass and challenge them.

Both territorial fitting processes and outcomes are influenced by market and policy drivers which may hamper or facilitate a successful farm's territorial integration. For example, rapid farm concentration and size enlargement tendency pushes many small farms out of production or urges them to rethink their production systems and create a new deal with territories and markets (de Roest et al 2018). Territorial fitting also touches upon large farms, but larger does not necessarily mean more territorially fit (in terms of ecological and social sustainability), as shown in many instances of investor and energy farms (Le Billon and Sommerville 2017). Achieving territorial fitness may be also made more difficult by policies which do not support small farms or do not recognise the relevance of small rural communities. Land grabbing, asset investment in agricultural and forest lands is yet another risk factor for achieving an empowering/invigorating territorial fitting of all kinds of farms. We assume that farms which are territorially well fit and integrated are more resilient in economic, social and environmental terms.

Methodology

The data for this paper were gathered within EU Horizon2020 project SALSA: Small farms, small food businesses and sustainable food security[1]. We followed the project's joint methodology based on several methods of data collection and analysis.

We conducted 30 in-depth interviews with owners of small farms and 10 interviews with managers of small food businesses (SFBs). Most of the SFBs had direct links with small farms and therefore they provided additional information or external view about SFs' territorial fitting. in July-September 2017 in the Pierīga region of Latvia. The region is a predominantly urbanised NUTS 3 level region, characterised by diversified farming systems, and different socio-economic dynamics in the central part, which is relatively close to the city of Riga, and in remote rural areas in North-Eastern part.

A number of questions were asked about SF and SFB links with the territory: farm size, agricultural and forest land area, number of plots, production methods and inputs, use of natural resources, engagement in environmental and tourism services, relationships with neighbours and local community, distance to cities, public infrastructure, geographical area of marketing, employment, and others.

We also developed regional food system maps for four regional key products[2] (milk, wheat, apple, vegetables) based on statistical data and expert assessment which helped to visualise

[1] Grant agreement No 677363.

[2] Accordingly to SALSA methodology, in each study region four key products were selected to analyse the regional food system. The selection criteria of the products was their importance in regional production and / or consumption and social or cultural importance in the region. The products were selected initially on the base of statistics and researchers' knowledge, and then confirmed with regional experts.

the position of SFs in food systems of various scales (domestic model of food provision, proximity food chains and agro-industrial food chains) and analyse their relations with other actors in food systems such as large farms, processors, retailers and consumers.

Based on farmer narratives and field-work observations we reconstructed farm-specific territorial fitness profiles and micro-examples of TF, which are presented in the next chapter. Both empirical profiles of TF and relational ties of SFs in food systems were used to identify key dimensions and typology of territorial fitness of small farms. The gathered information was analysed focusing on how a farm is linked to the local territory – what territorial resources it uses, in what way and what are outcomes at farm and territorial level. We regarded TF also across various types of SFs developed in the SALSA project, which classifies farms according to the degree of market integration (high–low) and the degree of self-provisioning (high–low).

Empirical findings: diversity and characteristics of small farm territorial fitting

In the empirical findings section, we first provide narrative descriptions of TF profiles of six farms and then analyse some common emerging dimensions of TF.

Territorial fitness profiles of small farms

The **subsistence farm** R15SF01[3] is a small agricultural holding managed by a pensioner couple. The size of the farm is 3.8 ha, varied production (potatoes, vegetables, fruit, eggs) mostly intended for self-consumption. The farm can be characterised as a high subsistence and low market integration farm. Only 40% of the farm's total output is sold through family networks (with the help of children) to customers in a nearby town or to neighbours. This suggests that the farm is in fact relatively well integrated, but in a different kind of market – local, informal, mediated through social relationships and territorial ties among people. The farm is gradually downsizing production due to ageing of farmers and some market regulation constraints (sanitary requirements and market fees) which are difficult to meet for a small producer. The farm and its activities are extraordinarily 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. There is a high co-production between nature, small scale farming and culture (local knowledge, tradition) which produces an inner resilience of the holding and family livelihood and high aesthetic value of the farm. Nature is a strong component in this farm's territorial profile; however, natural qualities are translated into a resilient farming model through farmers' local knowledge and skill.

The farm R15SF03 is a small **part-time farm**, with 7.4 ha of agricultural land and 9.6 ha of forest. Both the farm woman and her husband have other jobs and they each spend an average of two hours a day on farming activities. The farm is a part-time subsistence holding with a high degree of self-provision – 80% of the produce (eggs, potatoes, vegetables, pig-meat) goes for self- and extended family consumption, and the remaining 20% (hay and grain) is fully bartered with neighbours and relatives. Forest is an important asset and source of income as fire-wood is prepared and sold to a community cultural house. The farm's territorial fitting is historically shaped by kinship and the lived experienced relationships within a small village community. Both farm family members were born in the village and have lived there all their lives. The farm is surrounded by five other farms which all belong to the siblings or relatives of the farm's woman and her husband. The land was privatised after the collapse of a socialist collective farm. When farmers quit dairy production a few years ago, most of the land was rented to the relatives and the cultivation of remaining plots is arranged with relatives and neighbours on a pure barter (of land, machinery, labour and products)

[3] The abbreviation identifies the number attributed to the region studied in the SALSA project – region 15, and the number attributed to the small farm interviewed – SF01.

basis. Therefore, the TF of the farm is strongly shaped by its social ties and social and territorial embeddedness. However, the future resilience of the farm and its succession remains unclear; the probability of converting the farm into a summer house is high.

Farm R15SF25 is a **niche market oriented diversified small farm** (13 ha of land) managed by an entrepreneurial farm woman who has been involved in agriculture since 2002, after quitting her job in the city and acquiring a farmstead. The farm is characterised by diverse production: potatoes, tomatoes, seedlings, eggs, vegetables, sheep and sheep products (meat, wool, knitwear). Most of the produce is sold by the farmer herself in the regional market through direct sales on local markets, fairs and an on-farm shop. However, a substantial proportion of the produce also reaches 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 high premium markets and are sold to customers (mostly Latvian emigrants) in cities like Dublin, London and New York with no intermediaries involved. Despite the extraordinary breadth of market geography, the farm itself is territorially well fit in the given land and agro-ecological conditions. It 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 territorially squeezed amidst the fields of one of the largest and most intensive grain producing farms in Latvia of a size of 6000 ha that applies highly intensive and eco-destructive technologies of massive spraying and artificial fertilising. On the one hand, this makes the relationship between the two farms complicated. On the other hand, the farmer is involved in some barter exchange with the big neighbour, and she also networks with a small brewery in a nearby village who supplies mash (by-product in beer making) for sheep feed in exchange for meat and vegetables, which is an example of a circular economy at local scale. The TF in this farm is supportive to niche production, resource-saving agro-ecological methods, and technically and socially advanced marketing (Facebook, mobile parcel services, export).

The TF profile of another **market-oriented and specialised small farm** R15SF26 (4,6 ha of land, specialisation in tomatoes and other vegetables production in poly-tunnels) is characterised by well-thought out use of inputs available on the farm (soil, water) and buying or exchanging other inputs (manure, peat, seeds). Manure is bought from neighbouring animal farms, and this land-based resource is integral to obtaining the special taste of tomatoes which is appreciated by customers in the local market and is the reason why the farm has acquired some 30 regular visiting customers. There is a linkage between natural and land resources used in production, taste of the produce, and clientele. The farmer has, in her own words, concluded a '*deal with wild boar and roe dear*' as she leaves surplus potatoes in the nearby forest for 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. The business model of this farm fits in the local economy concept and is characterised by proximity economic ties – on-farm sales, vicinity of market town, selling on local market, long-standing relations with permanent clients based on proven quality and trust, barter among neighbours. In the case of R15SF26, from time to time help is provided by a much bigger neighbour farmer – a grain producer who owns 400 ha and helps with machinery at ploughing and harvesting periods in return for wheat at a mutually beneficial price.

The **dairy and meat cattle farm** R15SF10 is run by a middle-aged farmer. The farm is market-oriented: most of the farm's products (65%) are sold in the market. But it is considerably food self-sufficient providing around half of the food consumed in the household. The farmer has taken the farm over from his parents who are still living at the farm. The 20 ha they own has belonged to the family for many generations, at least for 300 years, with an interruption during the Soviet period. The family has experienced territorial transformations which have also impacted the farm's development. Since the farm was restituted during decollectivisation in the beginning of the 1990s, the farm family has been witnessing the urbanisation of the territory – construction of new residences and related infrastructure, inflow of new residents, increasing traffic, etc. Nowadays, the farm house is literally squeezed between two roads, and the farmland is cut in half by one of the roads.

According to the farmer's experience, this urban sprawl has a damaging effect on the farm's environment and the natural resources used on the farm, and it has created conflicts within the territory. Pollution of ground waters, disappearance of fish, vibrations and noise pollution from the nearby roads are some of the negative effects on the natural environment that the farm experiences. (He has noticed also the disappearance of wild animals which caused losses to the farm several years ago.) The newly moved nearby residents in turn complain about the manure hills and smells.

Urbanisation has changed the farm's links to the market, consumers, and the community. Substitution of smaller shops by supermarkets has cut off a market for smaller farms. Nowadays the farmer sells milk and other dairy and farm products exclusively to his regular individual customers. The changes in consumers' preferences (inclination for low-fat products, for instance) keeps him from expanding his market without changing the product (the farmer sells whole milk and dairy products) and/or marketing (consumers' word-of-mouth). Pushing out the farmer from the territory also has a broader institutional context. According to the farmer, the local government is more supportive of urban commercial, rather than agricultural, development in the region. He has witnessed the local agricultural community diminishing.

The farmer confirms that he is passionate about farming; the long family history of farming adds to his responsibility to continue the farm. However, the modest current economic performance of the farm and pressure of urbanisation makes the farmer question the farm's future. Adapting to the increasingly urbanised territory, together with establishing new and strengthening the existing links with its new residents, exploring new market opportunities are among the key issues for the farm's future.

The farm R15SF07 is managed by an elder couple; it has been **downsizing farming activities** because of the owners' age and health. The couple farms an area of 6.5 ha – used as pastures for their dairy cattle, a vegetable plot and an orchard. The production has been reduced primarily to meet the household's needs. However, some irregular surplus, in particular milk and eggs but also vegetables, is sold or offered to family members and neighbours, and sold to other local customers, including to vacationists during summers. Therefore, the farm has adapted and still maintains its food provision function at a micro-local level. The strongest dimension of territorial fitting in this farm is manifested in the farmers' attachment to their land and to the nature. Farming for them is an interface with the natural environment: every step is linked to observations and interaction with the surrounding nature, sometimes involving negotiation of borders, conceding and even accepting losses – for instance, when a swan prevents the farmer's cow from accessing the river in order to protect his new-borns or when wild birds eliminate berries or peas. As non-commercial farmers, they seem to perceive these losses as less fatal. The farmers' care for the wild nature was exemplary manifested when they took care of abandoned eagle-owls and in cooperation with ornithologists reintroduced them into their natural habitat. The only tangible benefit of farming in harmony with the farm's natural environment seems to be the very maintenance of the wild environment. The farm demonstrates co-living of agricultural and natural worlds, but it is strongly linked to the farmers' personalities. This balance may be challenged in the future by more production- and profit-oriented farmers taking over the farm.

Emerging common dimensions and characteristics of territorial fitting

Based on the examples of six farms, in the Table 1 below we identify and systematise key dimensions of territorial fitting and the characteristic features thereof as they appear in different types of farms and contexts. We characterise each farm accordingly to its socio-economic profile and estimate its territorial fitting across five key dimensions of territorial fitting identified from the data. Specific expressions of each TF dimension are explained in key words. Each dimension is estimated by the use of "+", "-" and "0" marks : they illustrate the relevance and intensity of the particular dimension for each of the analysed farms, with "-" pointing to negative manifestations, "+" indicating positive ones, and "0" – neutral ones.

Table 1. Dimensions of farm territorial fitting.

Farm No.	Farm type	Dimensions of territorial fitting (relevance and keywords)

		Nature	**Land**	**Infrastructure**	**Social ties**	**Economic ties**
R15SF01	Semi-subsistence, residual, retiring farm	+++ Birds Wind	+ Diverse plots	- Poor roads	+ Neighbours Children	+ Informal
R15SF03	Semi-subsistence part-time farm	+ Forest	++ Privatisation Barter Lease	0	+++ Kinship Relatives Neighbours	+ Municipality as buyer Barter
R15SF25	Market-integrated, diversified, entrepreneurial farm	+ Meadows	++ Extensive methods Conversion to organics -- Pollution by large farm	+++ Internet Social media Mobile parcel services Roadside	++ Urban consumers Distant consumers	+++ Niche markets Informal economic cluster Business networks Local circular economy
R15SF26	Market-oriented, specialised farm	+++ River Pond Fish, Birds Invasive plants Forest animals	++ Peat Manure	+ Distance to market town	++ Regular customers Farm visitors Neighbours Hunters Fairness	++ Local market Proximity market Informal local economy
R15SF10	Full time dairy and meat cattle farm	++ Previous use of local natural resources (ground water, a stream) which are deteriorated nowadays Organic but uncertified farm	++ Historically private family land, cut by a road	++ Good infrastructure -- Urban infrastructure deteriorating farm's environment	++ Direct links to regular local customers; cooperation with other local farmers for machinery services, farm products (manure) -- Conflicts with new urban residents, mismatch with local government	++ Direct links to regular local customers - Lack of market actors ready to collaborate with small farmers
R15SF07	Part-time semi-subsistence, retiring farm	++ Compromising with and supporting the wild nature -- Losses from pests, wild birds	++ Inherited family land	++ Good infrastructure	+ Neighbours' support	+ Irregular sales to individual local customers

We find components of territorial fitting in each farm in the sample, however not every farm is characterised by salient territorial fitness. Many farmers did not provide a coherent story of how they are entwined with the territory. This suggests that territorial fitting might be implicit and not all farmers perceive it as a specific strategy or a part of other strategies (e.g. production, marketing, livelihood maintenance).

A few commonalities emerge across the farms with regard to territorial fitting:

- Farm-based and locally available natural resources (soil, water, seeds, manure, traditional breeds and varieties, etc.) are widely used in less intensive agro-ecological production systems.

- Barter and informal economic exchange between neighbours (exchange of products, technical services, help with labour, informal lease of land) is a particularly salient practice of local farmer economy; it may involve monetary and non-monetary rewards. The basic principle is co-habitation and deed-for-deed: „*We all are neighbours, we have to live together*" (R15SF03). „*I don't need to take part in organisations; I can ask my neighbours and get helped*" (R15SF26). More than half of the interviewed smallholders were involved in informal economic exchange.
- Direct marketing and establishing closer links with consumers (including farm visits, on-farm sales, self-picking, participation in box schemes, etc.) build trust with consumers and increase consumers' awareness and recognition of SFs as providers of socio-biodiversity products.
- Forest resources (timber, fire-wood, non-timber forest products (berries, mushrooms, nuts) , wild animals) are an important source of income and food for the majority of SFs that possess forest land.
- Nature and wild-life are featured both as a friend and an enemy. A number of interviews suggested that nature not only provides resources but also poses threats (floods, excessive rainfall, damage caused by wild animals, migrating birds, etc.).
- Farm pets were mentioned in a number of interviews as connectors between local territorial assets in protective farm-level eco-systems (for example – dogs helping to protect from wild animals).
- Improvements in physical infrastructure, in particular roads, have been helpful for some SFs and SFBs to open a roadside stand, a farm-shop, improve access to customers.
- Cohabitation with nature and community ties with neighbours were explicit in older generation semi-subsistence farms, whereas for the younger generation of entrepreneurial farmers building relations with customers from cities and establishing economic collaboration with other farmers there were other more pronounced strategies.

Discussion

The preliminary analysis done confirms that small farms' fitting in local territory is linked to their resilience and outputs. There are numerous manifestations and varying levels of SFs' territorial fitting with different outcomes. We distinguish two preliminary groups of SF and their territorial fitting "strategies".

In the **group of predominantly self-provision oriented small farms**, which are often managed by ageing farmers who have a long experience of farming and living in the community, territorial fitting is a very special construction of farm history, personal and family history of farmers, and community traditions. In this case TF is very reliant on tacit, informal and local knowledge and reciprocity with neighbours, other farmers and community members, as well as on a very strong attachment to the land and farm's natural environment. In this case TF manifests as the use of local varieties, traditional breeds, simple but resource-efficient production methods (for example, self-prepared fertilisers), old local recipes for home-processing. TF that is based on local resources and products and strengths of local social ties manifests also in the way SF products are being traded or exchanged – mostly through informal networks with customers in the same village or surrounding area. Exchange in this case is reciprocal and present at all stages of production and consumption, for example – farmers exchange land on an informal lease basis, barter inputs (seeds, fertiliser), help each other with machinery or labour, buy or exchange farm products with neighbours (e.g. eggs, dairy products, meat) for family consumption, donate surpluses (e.g. fruit) to community members, etc. 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. This is why innovative farmers and new entrants in diversified and niche agriculture who are looking for new market opportunities often need to

consult the older farmers and community members to recognise and re-valorise the full diversity and potential of local/territorial resource base for farming.

In the **segment of newly established small farms (new entrants in agriculture)** managed by younger or middle generation entrepreneurial farmers territorial fitting may be used as a deliberate strategy to engage in new production (new crops, new production systems) and emerging or existing niche markets. Farmers skilfully valorise the land-based resources available on a farm (e.g. pastures, soil fertility) to produce higher quality products for specialised markets. Often this territorial fitting of the value base is combined with targeted economic collaborations (in particular – exchange of production inputs, mutual help with labour or machinery) with other farmers and SFBs in the vicinity to increase the effectiveness of production. In many instances this economic exchange is organised along the principles of a circular economy, in particular when producers in the locality exchange residuals and waste (e.g. manure, digestate) for new production cycles. In the group of young entrepreneurial farmers (in particular in vegetable, sheep and other niche productions) we observed links between territorial resource use and niche marketing (direct sales, internet trade) that were closer than the links between territorial fitting and enactment of local social relationships. This may be explained by the fact that niche markets are often located in cities and even in other countries beyond the local community.

The analysis allows us to better frame the concept in rural development context. Territorial fitting is a function related not only to food production on small farms but also to a diverse range of other activities: tourism, environmental protection, nature conservation, carbon sequestration, recycling, local renewable energy use, small scale and artisanal food processing, etc. If TF is about clever and sustainable use of various resources (natural, social, economic, physical and administrative) in a given territory, it also enhances local labour relations, supportive social ties and value chain relationships. Territorial fitting is an embedding activity which presumes a farmer's autonomy but also relationships with other actors who may be of a different opinion with regard to what it means for a farm to be fit and well adapted in a locality, a community, a region.

Territorial fitting may become a scientific as well as a political concept in several respects: with regard to largely uncontrolled and market-driven farm concentration and size enlargement, which results in squeezing small producers out of agriculture; developments in peri-urban areas where urban expansion and influx of new populations change land use patterns; depopulation in remote areas which depletes the social fabric in communities and restricts the knowledge bases, labour availability and markets for smart use of territorial resources. Yet another aspect of 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 enforce local level agri-environmental resource balance in a clever and coherent way (for example, use soil qualities, forest resources, plot combinations, plant varieties, underground, surface and rainfall water, and other resources) to produce a variety of products and goods for farm use and also for exchange (fresh food, processed food, energy, traditional medicine). Examples can be provided of TF enabling SFs in managing nature conservation and biodiversity protection at a small scale and stewarding micro-landscapes and micro-level ecosystems. Small farms which fit well in their territory act against climate change vulnerability (floods, draughts, extreme winds) at a micro-geographical scale and this is an invaluable contribution to climate change adaptation and mitigation as well as the delivery of environmental-climate public goods.

Conclusion

In this paper we tried to apply the notion of territorial fitting / fitness to the analysis of small farm functioning in local and regional food chains and in wider food and socio-ecological systems. We reviewed empirical examples of farm territorial fitting and elaborated on the main characteristics and dimensions of TF. In addition, we examined some links between territorial fitting, market engagement and other aspects of the functioning of small farms. We also identified some structural tendencies such as farm concentration, competition for land,

urban sprawl in peri-urban regions, depopulation, infrastructure development and other, which require a response from SFs and SFBs.

Nature, land, infrastructure, social and economic ties were identified as five key dimensions of territorial fitting. On a positive note, TF helps farms to engage in local and regional food systems, in particular in short value chains, domestic, proximity and organic supply models by offering specific local products or developing social connections with urban consumers and economic collaborations with other farmers and businesses, which help to produce and market a diverse range of products (including niche products). On a more critical note, resilience of small farms is also challenged by processes taking place in a territory: land contestation, expansion of large farms, aging of rural (as well as urban) population, urban sprawl, poor road infrastructure. Farmers need to have the skill to navigate and locate their farming activities in a territorial context. We may suggest that TF can be a process driven by both individual actors (e.g. farmer, short supply chain intermediary) and a multi-actor coalition.

Further empirical and theoretical research is needed to specify the concept of territorial fitting and explore its relation to food and nutrition security and delivery of environmental and social goods.

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