

New Knowledge Networks of Small-Scale Farmers in Europe's Periphery

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Abstract

In this paper we assess the integration of new entrants to small-scale farming into agricultural knowledge and innovation systems (AKIS), in four study sites located on Europe's periphery (Bulgaria, Poland, Portugal, and the United Kingdom). Utilising qualitative case studies undertaken in 2013, we assessed the knowledge acquired to inform three new activities being undertaken by study participants: agricultural production; subsidy access and regulatory compliance; and farm diversification (specifically agritourism). Findings were assessed in relation to network structure, demonstrating clear patterns in new knowledge access: formal 'agricultural advisors' identified in the case studies were sought primarily for codified managerial knowledge which was delivered through centralised networks. In contrast, production and diversification knowledge were exchanged through 'distributed' and 'decentralised' networks, where a range of actors were involved across varying geographical distances. Findings thus suggest that state-funded services for small-scale farmers are largely embedded in traditional, linear models of knowledge transfer, and confirm earlier research that small-scale farmers are under-served by formal advisory services. However, new entrants employ more flexible, multi-actor approaches to production and diversification, much of which was 'free' in terms of financial cost, but not necessarily freely available to those without substantive social capital lodged in communities of place and practice. In all four cases, we found that small-scale farmers utilise formal advisory services primarily for accessing subsidies (e.g. completing application forms), rather than acquiring production knowledge. The authors argue that by utilising the limited state funding allocated to advisory services for small-scale farmers primarily to enable these farmers to access subsidies, important opportunities for the 'generation of space for innovation' can be lost.

1. Introduction

Small farms play key roles in maintaining the environment, society (including employment) and culture (preserving traditions, manufacturing traditional products), as well as creating favourable conditions for animal welfare (European Parliament resolution of 4 February 2014 on the future of small agricultural holdings (2013/2096(INI)), 2014). These contentions are supported by special provisions within the European Union's Rural Development Programme (RDP) to promote farm development and business diversification (e.g. the Small Farmer Scheme and RDP funding to provide economic development advice to small-scale farmers, European Commission, 2013). Despite this recognised importance of small-scale farming, structural changes in European agriculture favour larger-scale farms (Zegar, 2012; European Commission, 2011). Smaller scale farms not only lack economies of scale, they are more likely to be occupied by older, less business-oriented farmers (Zagata and Sutherland, 2015) and frequently represent semi-subsistence farms (Davidova *et al.*, 2013), which function primarily as a buffers against poverty rather than as productive commercial businesses.

Widespread privatisation of agricultural advisory services across Europe in recent decades has further disadvantaged small-scale farms: as Kidd *et al.* (2000) point out, private advisory services may disproportionately serve those who can afford them (i.e. larger scale farms). In line with this, Labarthe and Laurent (2013) argue that reduction in public extension services across Europe has disproportionately impacted on small-scale farms, which are less visible as clients. A review of the Farm Advisory Services similarly found that the main beneficiaries were large-scale farms (European Commission, 2009). The Farm Advisory Service (FAS) review also found that in 14 member states, advice on Cross Compliance was the sole focus of the FAS (European Commission, 2009). The FAS review thus implies a transition towards advisory services focused on 'managerial knowledge' (i.e. the knowledge and skills to manage resources, grants, legislation and bureaucracy, Koutsouris, 2008), rather than adoption of new technologies. The report thus provides evidence that in many European countries, the role of the FAS in 'generating spaces for innovation' is limited to enabling access to funding.

Although important, access to the FAS represents only one aspect of contemporary agricultural knowledge systems. Agricultural innovation is conceptualised as occurring through networks, including entrepreneurs, researchers, consultants, policy makers, suppliers, processing industries, retailers and customers. Recent research has emphasised that both local knowledge and scientific knowledge are important for achieving sustainability in agricultural systems (Curry and Kirwan, 2014; Kania and Kaplon, 2014; Labarthe and Laurent, 2013). Instead, innovation and up-take of new farming technologies or practices are widely accepted as resulting from iterative engagement in non-linear knowledge networks or systems.

In this paper, we focus on newly established knowledge networks of small-scale farmers. Integration into new networks for the purpose of gaining knowledge suggests active intentions to change farming practices, adopting new or established innovations. To ensure the assessment of new knowledge networks, the research focused primarily on new entrants to small-scale farming. The research is structured to address the types of knowledge small-scale farmers access, the types of networks characterising these new networks and the role of formal advisory services in these networks. We demonstrate this through research on three major knowledge topics: commodity production; access to subsidies; and business diversification knowledge (specifically agritourism).

2. Conceptualising new knowledge networks

The concept of 'agricultural knowledge and information systems' (AKIS) was developed and widely popularised in the 1980 and 1990s, comprising the idea that farmers exchange and produce knowledge in conjunction with a number of sources, which include research, agricultural advisors, and education/training and support services (Röling, 1988; Röling and Wagemakers, 1998). Röling and Endel (1991) defined AKIS as:

"The persons, networks and institutions, and the interfaces and linkages between them, which engage in or manage the generation, transformation, transmission, storage, retrieval, integration, diffusion and utilisation of knowledge and information, and which potentially work synergistically to improve the goodness of fit between knowledge and environment, and the technology used in agriculture" (1991:10).

In recent years, the AKIS concept has been appropriated to address European policy concerns about innovation, and re-termed 'agricultural knowledge and innovation systems', reflecting an ideological shift towards innovation (Dockès *et al.*, 2011). Within the overall AKIS concept, a number of different conceptualisations of information, knowledge, types of knowledge and innovation can be operationalised (i.e. the AKIS construct is overarching, rather than presenting an established conceptual approach). When assessing knowledge exchange and development, two general forms of knowledge are typically identified: tacit (implicit) and codified (explicit) knowledge, a distinction which

can be traced back to Polanyi (1958). Implicit knowledge or 'know how' is acquired through practice and experience, and is not necessarily related to cognitive learning (e.g. riding a bicycle). In contrast, explicit or codified knowledge can be easily reported and documented (e.g. through scientific reports), although it may require translation into more adapted knowledge, suited to practical application (EU SCAR, 2012). Nonaka and Toyama (2003) identified four types of knowledge creation which ideally follow on from and build upon each other:

- Tacit or implicit knowledge is acquired through *socialisation*, which means that the learning person is directly and actively exposed to an environment that induces personal experiences (i.e. 'hands-on learning').
- Through communication about these experiences, tacit knowledge is articulated and becomes explicit – a step that is called *externalisation*.
- Sharing this explicit knowledge with knowledge from other people, systemising and integrating it, requires *combination* activities.
- Then, using the explicit and combined knowledge practically in new situations induces a fourth 'embodying' step, called *internalisation*, where the (new) knowledge becomes tacit or implicit at a higher level (Nonaka and Toyama, 2003, p.5)

As such, tacit knowledge most easily spreads within social networks, which enable the collective sharing of ideas and activities for common aims. In contrast, codified knowledge translates mental frameworks into symbols, and is therefore more easily made explicit (e.g. through textbooks, websites) (Knickel et al., 2008).

The different types of knowledge are associated with different types of network. Smedlund (2008) draws on Baran (1964) and Barabási (2002) to identify three primary types of networks, which link to different types of knowledge. Centralised networks, featuring a central node through which all knowledge flows, are most useful for 'routine problem solving' (e.g. explicit, standardised knowledge, such as advice on general regulatory issues). Codified knowledge is most likely to be transmitted in this type of network, representing 'know why' and 'know what'. A central node can channel this information (e.g. an agricultural advisor), or individuals can access it directly, through transmittable sources such as books and web-sites. In contrast, 'distributed networks' are dense networks of ties where primarily tacit knowledge is exchanged. Distributed networks resemble 'communities of practice' or 'networks of practice' (e.g. peers who exchange personal knowledge to varying degrees). As such, these networks depend on 'social capital' – simply defined as "networks together with shared norms, values and understandings that facilitate co-operation within or among groups" (OECD, 2001: 41). The third type is decentralised networks, with multiple nodal points connecting diverse individuals. Decentralised networks thus involve knowledge from outside of peer groups to connect disparate groups and their associated knowledge. Smedlund (2008) associates this type of network with the acquisition of what he terms 'potential knowledge' (e.g. of future or cutting edge innovations). Gatekeepers link diverse groups; brokering these boundaries can be an important function. These types of networks are characterised as being in constant change and asymmetric, as the actors involved have considerable differences (e.g. business size). Klerkx and Proctor (2012), in their empirical application of Smedlund's work, found that the distinctions are less distinct in practice.

3. Methods

In this paper, we assess the knowledge embedded in new farming networks in four contrasting case studies in Poland, Bulgaria, Portugal and the United Kingdom. The cases were selected as part of the PRO AKIS (Prospects for Farmer's Support: Advisory Services in European AKIS) 7th Framework Project, funded by the European Commission. The selected case studies addressed a diverse range of small-scale farmers. They include new-entrants and semi-subsistence farmers in Plovdiv region, Bulgaria; small-scale farmers diversifying into agritourism in the Carpathian Mountains of Poland;

newly established small-scale blueberry producers in the central-north region of Portugal; and new entrants to crofting on the west coast of Scotland (UK). The four cases have in common the establishment of new knowledge networks¹, as well as the small scale of the farms involved, relative to national farming characteristics. We have not attempted to standardise a definition of small-scale farming, utilising instead the accepted definitions of small-scale farming in the study sites. As Davidova et al. (2013) note, there is no commonly accepted definition of a small-scale farm.

Table 1: Study participants

	Farming participants	Stakeholders/ Key Informants	Age range of farmers	Farm size	Main Activities
Bulgaria	17	4	Under 40	3-6 ha	Mixed horticulture
Poland	15	5	All ages	3-9 ha	Agritourism
Portugal	25	6	Under 40	Less than 1.5 ha	Blueberries
United Kingdom	21	8	All ages	0-20 ha plus common grazing	Mixed livestock, horticulture, diversification (including agri-tourism)

Owing to the differences in land capability, the definition of small-scale farming applied in this research ranged from less than 1.5 ha in Portugal to less than 20 ha in the United Kingdom (not including access to common grazing of over one hundred ha in some cases). The case studies also represent different 'types' of small-scale farm: semi-subsistence farms were most common in the Bulgarian case, small-scale commercial farms particularly evident in the Portuguese case and to a degree the other three countries, and hobby farming more common in the UK case. Owing to the diversity of production systems across the four cases, not all case studies explored networks relating to all three topics. A joint analytical framework was developed collaboratively by the researchers to ensure that the interviews had sufficient similarity in terms of topics covered for comparative analysis. Findings were analysed qualitatively according to the analytical framework, and compiled into English-language reports which followed a standard template (www.proakis.eu). This paper is based on those reports.

4. Case studies

In all four cases, research was undertaken in regions where there are larger scale farms, but small-scale farms are common. In all of the cases, both public and private advisory services serve small-scale farms as a subset of the total farming population in the associated region. For further information on each individual case, see the PRO AKIS website (www.proakis.eu).

In Bulgaria, the case study focused on young people accessing RDP funding to establish new farms (typically small-scale vegetable or orchard production) in Plovdiv Region. Owing to the restrictions on new entrant supports (Measure 112), the study participants were all less than 40 years old with newly established farms and were undertaking farming on a full-time basis, primarily on rented land. The average size of the farms in the region is about 6.8 ha.

¹ In the UK, Portuguese and Bulgarian cases, the farmers interviewed were new entrants. In the Polish case, the study was of existing farmers who had recently diversified into tourism provision i.e. new entrants to agri-tourism, rather than farming *per se*.



Figure 1: Location of case study regions (Source: Maderiera *et al.*, 2014)

In Portugal, the case focused on new entrants who were taking up small-scale soft-fruit production (i.e. blueberries) in central northern Portugal. The crop was introduced to the region in the 1990s, with limited success. Efforts were renewed in the late 2000s, through initiatives developed by local governments to utilise RDP Measure 112 to address unemployment and land abandonment. Owing to the small geographical scale of most horticultural enterprises, to identify small-scale farms, the Portuguese sample was restricted to small-scale blueberry producers with less than 1.5 hectares, earning less than 25,000 Euros/year from agricultural production, and who had established their farm post-2007, with at least one harvest. These farmers market their produce collectively into international markets, certified by GlobalGAP.

In Poland, the research focused around advisory service provision to small-scale farms which were developing agritourism enterprises in the Carpathian Mountain region. The participants in the Polish case were located in three Carpathian provinces (Malopolska, Podkarpackie and Silesia) and selected to represent a range of agritourism providers which had been operating for between 3 and 16 years.

In the United Kingdom, the case study centred on new entrants to crofting, a traditional form of small-scale farming (typically involving sheep and cattle production, but also tourist accommodation and market gardening) on the islands of Skye, Harris and Lewis (Scotland). Participants could be of any age, but were selected on the basis that they had occupied a legally established croft for less than 12 years.

5. Characterising new knowledge networks

The research focused on knowledge networks associated with three topics: state grants and subsidies, commodity production, and diversification into agritourism. It is important to note that all of the farmers in the study accessed a number of different sources of knowledge. The associated networks evolved over time, typically starting with a single entry point, based on recommendations from family or neighbours. As such, the networks presented here overlap and have been simplified for presentation purposes.

5.1 Accessing grants and subsidies

Knowledge enabling access to subsidies can be termed 'managerial' knowledge (Koutsouris, 2008), in that it relates primarily to completion of administrative forms. Subsidies accessed included measures to support young farmers, subsistence farming, agri-ecological measures, diversification, local development and the single farm payment. Assistance with completing these applications was usually supplied on a one-to-one basis with a formal agricultural advisor, typically working either for the state advisory service or a private advisory company. In a few cases the applications were completed by NGOs (e.g. environmental charities assisting with applications for agri-environmental grants). For both private and public sector advisory services, the applicant typically had to pay a fee or percentage of the resultant grant to the advisor. The exception was Bulgaria, where public advisory services provide this assistance cost-free, but payment is required for use of private consultancy companies.

Knowledge of state subsidies represents 'codified knowledge', with the guidance notes and application forms publically available through web-sites. Owing to the perceived complexity of these applications, the small-scale farmers in this study typically opted to have experts complete their forms for them. This was despite the on-line availability of information and a high level of educational achievement; participants also reported working with advisors out of fear of making mistake, not wishing to jeopardise an important source of farm income. The function of the advisory services thus becomes to 'translate' the codified knowledge available on state web-sites into usable form, which then led to successful applications. Form completion is offered as a service - the advisor simply completes the form using data garnered from consultations with the farmers involved and their own tacit knowledge; *externalisation* of this tacit knowledge and translation into a form usable by the farmer does not appear to occur - the skill of form completion remains with the advisor. As such, the networks formed are centralised in nature, with advisors acting as central knowledge hubs. The farmers involved thus return annually for similar services.

Small-scale farmers have a choice of who to go to for assistance in accessing subsidies and grants (i.e. 'know who'). For those establishing new farm holdings, this is often the first point of entry into formal knowledge systems; new farmers typically act on recommendations of family members and neighbours, who base their recommendation on the successfulness of their own past applications (i.e. 'know who' based on reputation for 'who how'). Facilitating subsidy access was the primary use of state agricultural advisory services by study participants: state-funded² advisors in Bulgaria, Poland and the UK reported spending the majority of their time on these tasks. In Portugal their role was minimal, owing to a very limited availability of state advisory services in general. In each of the countries, private advisors also offer these services, utilising different fee for service models. In Bulgaria and Portugal, fees for service are based on the success of the grant application – payment is proportionate to the amount of funding received, whereas in Scotland, there is a one-off fee for the application. In both cases, the fee for service creates an incentive to write a fundable application, rather than one which particularly suits the farm set-up or farmers' skill, owing to the desire for customer retention; there is also an incentive to go with 'tried and true' options (i.e. a tendency not to innovate), as evaluators are more likely to fund established approaches.

5.2 Accessing production knowledge

In contrast to subsidy access, there is a wide variety of means to access production advice, including formal education, training courses, open days, work experience, magazines, books and through the internet. Study participants also accessed advice from: public, private and NGO-funded agricultural advisors, agricultural pharmaceuticals stores, neighbouring farmers, family members with agricultural experience, accountants or accounting companies, seedlings importers, processors, scientific

² Although the former state-funded advisory services in the UK are now largely privatised, SAC in Scotland continues to receive a block grant from the Scottish Government to subsidise advisory service provision in remote rural areas.

institutes, producer associations and non-governmental associations. This section presents findings from the Bulgarian, Portuguese and UK case studies.

By far the most common source of production knowledge in the Bulgarian and UK sites was friends and neighbours (i.e. tacit lay and local knowledge). As such, the knowledge was located primarily in distributed networks of dense interpersonal ties. Portugal was an exception because blueberry production is new to the region – there was therefore limited local knowledge on which to draw. In this case, the creation of the an education and mentoring group (the ‘Small-Fruits Cluster’ (SFC) by farm business organisations and profit and non-profit producers groups, translated and disseminated knowledge to new entrants. Because the blueberries were marketed jointly at national level, poor standards of production in the study site were negatively impacting on the overall reputation and quality of Portuguese blueberry production, marketed jointly through GlobalGAP; experienced farmers from southern Portugal were thus motivated to act to address this problem in central Portugal, forming and participating in a decentralised network.

In all three sites, provision of production advice was a secondary activity for state-funded advisory services. In both Portugal and Bulgaria, advice on production was part of the ‘package’ of services available to participants who had already achieved RDP funding. However, almost all of the Bulgarian respondents indicated that although they retained their relationships with their formal advisors for advice on business planning and project implementation, they were not using them for their production activities. In Portugal, the study participants indicated that they would have liked to access production advice from the state advisory sources (i.e. it was a trusted source) but this was no longer available. The quality of production advice provided by private consultants to the blueberry producers in the Portuguese was highly questioned, owing to their lack of practical experience: the advisors were perceived as invested in securing the success of the application, but were less concerned about choice of varieties or adapting the business plan to land capability, leading to substantial complaints by study participants. Instead, the SFC was specifically established to address the problem of poor quality production knowledge being transferred from private advisors to new entrant farmers. In Scotland, state-funded agricultural advisors were more likely to be identified as credible sources of knowledge relating to production, because many of the advisors were operating their own crofts. They thus achieved credibility through a combination of codified and tacit knowledge, although in some cases this tacit knowledge was not deemed sufficient to address location-specific production issues. When small-scale farmers did access advisory services for assistance with production, it was typically to acquire specific pieces of codified knowledge, such as soil analysis. State advisory services in Scotland and Bulgaria were also involved in facilitating the spread of tacit and codified knowledge through group events (e.g. farm open days); in Portugal this function was fulfilled by farming organisations. As such, advisors were involved in knowledge brokering, enabling the *externalisation* of tacit knowledge through targeted *combination* activities.

A further issue for small-scale farmers was the cost of advice. Study participants reported that private consultancy companies are not often accessed by small farmers for production advice because it is perceived as expensive. Instead, input suppliers, such as agro-pharmacy stores, accounting companies and import trade organizations are accessed. In Bulgaria, there is an agro-pharmacy store in almost every village and small-scale farmers use such stores not only for acquisition of the required inputs but also for consultancy on various diseases or pests on the plants they grow. These consultancies are generally cost-free, but linked to purchase of recommended inputs. As trained agronomists located in the local community, they combined tacit and codified knowledge, and were part of the farmers’ distributed networks.

This combination of tacit and codified knowledge was similarly sought out when accessing the expertise of friends and neighbours. A pattern of overlapping roles, or ‘hybrid knowledge’ amongst chosen local advisors was observed. For instance, recently some of the longer term Portuguese

blueberry producers have become private advisors and/or project developers and may also be members of the board of a farmers' association. Consequently, the same individual often acts as a facilitator, a supplier and a demander of knowledge and expertise within the network – thus engaging with multiple roles in the distributed network. In the UK site, local veterinarians who are also crofters can provide this combined knowledge. The distributed networks characteristic of production knowledge networks thus include a range of actors, primarily based on tacit knowledge but also including a degree of codified knowledge. However, this knowledge was not automatically available to everyone who wished to join the networks; particularly in the Scottish case, longer term crofters were not always willing to share their expertise with newcomers. In these cases, social capital associated with long-standing family relationships was necessary to activate these connections.

Within this range of actors in the network, knowledge of recent scientific or technological advances is peripheral – relatively few innovations in production were introduced. The knowledge exchanged by farmers was primarily tacit (i.e. the 'know how' associated with animal husbandry and horticultural production). However, in some cases, farmers also sought codified knowledge directly from source material (e.g. blueberry producers searched for new varieties on-line).

5.3 Accessing knowledge about farm diversification

In the cases studied, provision of tourist accommodation was the most common form of diversification, but 'agritourism' can also include tourism packages, educational farms, and farms for children and seniors. We focus here on knowledge relating to developing tourist activities and marketing. Knowledge on these topics can be acquired through individual consultations, workshops, study trips, training, and cooperative networks. In this section, the data comes from the Poland and UK case studies.

The two cases represent opposite extremes in terms of organised state involvement. In Poland, the National Agricultural Advisory Centre – a governmental institution subject to the Minister of Agriculture and Rural Development - is responsible for collecting and processing knowledge, and then transferring it to advisory institutions that directly interact with farmers. The Branch of Agricultural Advisory Centre in Krakow has specific responsibility for both rural tourism and agritourism. Knowledge related to agritourism and innovative activities are transferred initially to specialists at provincial Agricultural Advisory Centres, as well as representatives of Agricultural Chambers, agritourism associations, and since 2004 (when Poland joined the EU), with Local Action Groups. There is thus a largely centralised network within the Polish advisory system, which transfers knowledge between divisions and ultimately to farmers directly on an individual basis. However, the National Agricultural Advisory Centre also works to establish decentralised networks: every two years it brings together a wide range of organisations for an agri-tourism conference. There is also some evidence of decentralised networks facilitated by agritourism providers associations, which organise fairs, conferences and exhibitions. Distributed networks of agritourism providers do not appear to exist, partly because of the distance between agritourism operations but also because immediate neighbours would be in competition with each other. Instead, both tacit and codified knowledge are accessed through a combination of centralised and decentralised networks.

In contrast, knowledge exchange in the Scottish case is almost completely separated from the state-funded agricultural advisory system. The exceptions are a small number of developments which have been facilitated through the Scottish Rural Development Programme. Instead, tourism activities undertaken by farming participants are developed on a largely *ad hoc* basis, through decentralised networks, which include formal business development advice provided by rural development agencies, accountancy advice on tax, architectural services, group marketing through the Scottish Crofting Federation, and informal connections to agritourism providers in other regions. These can be providers in other parts of Scotland through the Scottish Crofting Enterprise Website or connections within the previous locales of the new entrant crofters. Specific knowledge on diversifying into tourist

accommodation appears to be obtained partly through 'trial and error' (i.e. *socialisation*), whereby the accommodation is constructed and lessons subsequently learned through market experimentation. Respondents also frequently drew on networks and skills established before becoming crofters (ranging from joinery to previous tourist service provision). In terms of the networks accessed, these are numerous and relatively informal, in so much as it is likely that each crofter involved in diversification has a different network which they interact with for knowledge exchange. As such, networks are decentralised.

6. Concluding discussion

The study confirms earlier findings that small-scale farmers are under-served by formal advisory services (Kidd et al., 2000; Labarthe and Laurent, 2013). When these formal advisory services do interact with small-scale farmers, it is primarily to enable access to government funding, through top-down service provision in centralised networks. As a result, there is limited scope for innovation in terms of the method of interaction, or the originality of the associated application. Findings are also consistent with Ingram (2008) and Sutherland *et al.* (2013) who argue that privatisation of advisory services puts pressure on advisors to develop grant proposals which are more suited to the farmers' preferences than achieving the aims of the grant application. In addition, this one-to-one method, with the expertise retained by the advisor, reinforces historic top-down knowledge transfer patterns, which Smedlund (2008) argues are not suited to most forms of innovation.

In seeking production knowledge, the participants in this study often relied on a 'hybrid actors': individuals with both codified and tacit knowledge. Although presented as cost-free, this knowledge typically comes at a price. Input suppliers, for instance, are typically trained agronomists, who have knowledge of what inputs are available and but offer advice oriented towards product sales. However, Sutherland *et al.* (2013) found that the commercial, NGO or private status of the source of advice was less important, in terms of credibility and trust, than the history of positive interactions with the advisor in question. Similarly, Kaberis and Koutsouris (2012) found that the trust could develop over time, particularly in situations where inputs were changing rapidly (e.g. new regulations and changing pesticide needs). Input suppliers offering biased production knowledge will not retain trust, although the subtleties between different potential recommendations may not be observed.

The selection of advisors – both formal and informal – thus appears based on a combination of personal relationships and access (both in terms of cost and physical proximity). Other local experts included retired veterinarians, and former collective farm employees, who similarly combined tacit and codified knowledge. Although this advice was also cost-free it was not necessarily freely available, requiring social capital to access in some cases. Individuals require reasons to share their commercial business knowledge, particularly with potential competitors. In the Portuguese case, expert farmers were motivated to provide assistance to newcomers because their markets were threatened by the newcomers' poor quality production. Scottish farmers were more reluctant to share their knowledge, until the new entrants demonstrated willingness to undertake experiential learning through group events (i.e. to engage in *socialisation*). Small-scale farmers themselves were sometimes hybrid actors, bringing considerable knowledge to farming from off-farm employment or training. This was particularly important for diversification of the farm business, enabling them to make the 'bridging' connections characteristic of decentralised networks. We suggest that there is scope for considerable further development of these resources with agricultural innovation systems, through providing training and opportunities for these recognised local leaders, and facilitating mentoring activities.

6.1 Limitations

The number of study participants involved with formal advisors represents the deliberate sampling strategy of the researchers, rather than a feature of small-scale farms in the study sites. Owing to the overall focus of the PRO AKIS project, participants were primarily those who had accessed formal advisory services (public, private or NGO funded). As such, the participants as a whole represent 'active knowledge seekers'. However, the advisors interviewed for this study concurred that the majority of small-scale farmers in all four of the study sites had no engagement with state or private agricultural advisory services. We therefore assessed how those small-scale farmers who do engage with advisory services structure these interactions, in relation to other sources of knowledge. The cases are also very different. Although qualitative research by nature is not generalizable, identifying similar findings in cases located in four corners of Europe suggests that the issues identified are not limited to the case study sites.

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