



## Typology and distribution of small farms in Europe: Towards a better picture

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### ABSTRACT

The contribution of small farms to local food supply, food security and food sovereignty is widely acknowledged at a global level. In the particular case of Europe, they often are seen as an alternative to large and specialised farms. Assessing the real role of small farms has been limited by a lack of information, as small farms are frequently omitted from agricultural censuses and national statistics. It is also well acknowledged that small farms differ widely, and are distributed according to different spatial patterns across Europe, fulfilling different roles according to the agriculture and territorial characteristics of each region. This paper presents the result of a novel classification of small farms at NUTS-3 level in Europe, according to the relevance of small farms in the agricultural and territorial context of each region, and based on a typology of small farms considering different dimensions of farm size. The maps presented result from an extensive data collection and variables selected according to European wide expert judgement, analysed with advanced cluster procedures. The results provide a

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fine grained picture of the role of small farms at the regional level in Europe today, and are expected to support further data analysis and targeted policy intervention.

## 1. Introduction

Recent analyses of national agricultural census data from 167 countries and territories indicate that there are globally at least 570 million farms, corresponding family farms to more than 90% of all farms (FAO, 2013; Lowder et al., 2016). In the European Union (EU) small farms are located particularly in peripheral regions, such as the Northern Scandinavia, Scotland and Ireland, South-eastern Europe and in all the Mediterranean countries (Claros, 2014). Small farms are also often related to areas of marginal agricultural productivity, such as mountain ranges (e.g. Pinter and Kirner, 2014; Salvioni et al., 2014). All in all, they correspond to 67% of all farms in the EU (Kania et al., 2014).

Seen from the perspective of the current economic conditions in the agricultural sector, dominated by global markets, farm specialisation, scale increase and disconnection between rural communities and the farm business, small farms might appear inefficient and irrelevant for modern agriculture. However, the importance of small farms for rural sustainability in Europe has been demonstrated in numerous studies (Shucksmith and Rønningen, 2011; Grubbström and Sooväli-Sepping, 2012; McDonagh et al., 2017), including the continued role as food providers for the farm household in many regions (HLPE, 2013; Tudor, 2015). Further, different case studies have shown that small farms are efficient in mobilizing resources beyond those pertaining to farm commercialization through market exchange, such as social capital, local knowledge and cultural heritage (Knickel, 1994; van der Ploeg, 2013; Šūmane et al., 2017). Small farms also support high levels of biodiversity and promote ecological resilience due to their inherent heterogeneity and diversity (Marini et al., 2009; Babai et al., 2015; Konvicka et al., 2016). Additionally, they are more straightforward to achieve trade-offs in the landscape (Bezák et al., 2007) playing, for example, a key role in fire and soil erosion prevention by maintaining meadows and pastures in mountain areas (e.g. Tasser et al., 2003; Höchtl et al., 2005). Moreover, small farms often develop innovative business models to overcome their intrinsic structural limitations, like informal land cessions (Koutsou et al., 2011), expansion strategies based on the provision of agricultural services (Moragues-Faus, 2014) or multi-family arrangement (Moreno-Pérez and Lobley, 2015). These innovative models make the ‘real’ structure of some holdings larger than what is captured by official statistics.

The continued importance of the small-scale agriculture in the aftermath of economic and financial crisis (e.g. Shucksmith and Rønningen, 2011), and the quest for developing policies to support them in different contexts (Pe'er et al., 2014), have renewed interest in the development of methodologies to assess and mapping small farms in recent years (e.g. Kuemmerle et al., 2009; Samberg et al., 2016; García-Pedrero et al., 2017). At the European level, typologies focused on farming systems (D’Amico et al., 2013; van der Zanden et al., 2016; Andersen, 2017) or in rural types (van Eupen et al., 2012; Pinto-Correia et al., 2016b) were also applied, but none were developed exclusively on the basis of different measures of the farm size at regional level.

Thus, even if their role is acknowledged, not much is known on the spatial distribution, context specificity, typology, and production capacity of small farms, nor on their integration and role in food systems (Graueb et al., 2016; Lowder et al., 2016). This may be due to lack of detailed data, but also due to the lack of adequate and tailored analytical approaches to grasp the diversity of small farms and the factors impacting on their distribution (Samberg et al., 2016). In Europe, this assessment is extremely complex since small farms display a wide range of organizational and structural patterns (Brookfield and Parsons, 2007; Davidova et al., 2013), not only due to differences in farm size and

contextual diversity, but also due to profound social and political changes that have occurred in the last century (e.g. Jepsen et al., 2015).

### 1.1. Defining small farms

It should be noted that there is no universally accepted definition of a small farm (or a smallholder) (Davidova and Thomson, 2014). Farm size can be assessed using farm structural size, economic size, herd size, labour force and farms’ market participation (e.g. purchased inputs, crop sales) (EC, 2011), although the most common criterion used for this purpose is farmland area. Small farms are usually defined using thresholds on these different farm size indicators (Davidova and Thomson, 2014; Lowder et al., 2016). Considering the structural size, small farms are defined by EUROSTAT and the Food and Agriculture Organization (FAO) as those with an agricultural area measuring less than 5 ha (Davidova et al., 2012), and this threshold has been used in several publications (Davidova, 2014; Galluzzo, 2015; Papadopoulos, 2015). However, the definition of the threshold is strongly influenced by the geographical context of the analysis, since the distribution of farm sizes is very heterogeneous across regions and countries (e.g. Hazell et al., 2010; Lowder et al., 2016).

Definitions including only the criterion of farm size have universal appeal as they are relatively easy to apply and allow simple comparisons across countries and world regions. However, they don’t capture all the complexities of farm systems. Ideally, where data is available, additional criteria might be used, such as the number of people working part- or full-time on the farm; the number of commodities produced and degree of specialization; and farm income or sales. Nevertheless, some of the indicators are related with specific types of farming, and are of limited use for a general assessment of the spatial distribution of small farms (e.g. EFSA et al., 2015 used a threshold of 75 cows and a family workforce of at least 80% to classify the small-scale dairy farms).

The use of only one group of indicators will always constrain the overall applicability and relevance of classification systems intended for a general assessment of small-scale farming systems. For example, Davidova et al. (2012) report the existence of high-specialized small farms representing significant business operations. Obviously, the opposite can also be observed, i.e., farms with large area but with small economic size. These latter farm types will probably be more common due to the large extent of less-intensive farming systems (e.g. Neumann et al., 2009; Temme and Verburg, 2011; Estel et al., 2016) and of biophysically constrained areas across Europe (e.g. Tóth et al., 2013; Borrelli et al., 2014; Aksoy et al., 2016; Hijbeek et al., 2017). Thus, intensity of capital and labour can compensate and sometimes even overcome the constraints related to land area. Vice-versa, abundance of land can make the use of labour and capital intensive strategies less necessary. Information about the two criteria, labour and capital, is thus required to define farm size. In this way the additional analysis of the distribution of these two criteria leads to a fine grained typology of regions. Thus, the choice of variables and their thresholds allowing the quantification of small farms in their different dimensions are critical.

Focusing on labour force, Petit et al. (2006) classified the small-scale farming systems as those employing less than 1.5 annual agricultural annual work units (AWU). However, only a few countries provide this data at a regional scale. Regarding the economic size, which is widely used for statistical and policy purposes within the European Union (EU) farms with less than 8 Economic Size Units (ESU) of Standard Gross Margin (SGM) are considered as small farms (EC, 2011). This threshold was used by Angelova and Bojnec (2012) to separate very small and small farms from high-income farms. Since 2010,

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