

Grassland-based farming systems in Europe

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This paper considers the importance of permanent grassland (PG) in Europe in terms of its area and extent and the range of ecosystem services (ES) it provides. We then consider what elements determine whether or not any particular grazing livestock farming system is sustainable in the 21st century, within the context of global change and current threats to permanent grassland. Finally, we used farm accountancy data network (FADN) data to characterise how farming systems with PG vary across Europe in terms of the dominant livestock types, stocking rates, the share of PG and the exploitation regime.

PG is defined as "any land dominated by grasses or herbaceous forage that can be grazed/mown and has not been included in the crop rotation of a holding for five years or more". According to Eurostat data for 2018, PG covered almost 60 million hectares across the EU-27+UK and accounted for 34% of the total Utilised Agricultural Area (UAA) (Eurostat 2021), although there are large differences between countries in terms of proportion of UAA, spatial fragmentation and distribution. This results in contrasting priorities in terms of the specific roles played by PG in different countries and regions.

Permanent grasslands support social infrastructure and high levels of biodiversity that in turn can enhance ecosystem function and value to society (Cardinale et al., 2012). PG are also the basis for many highly valued landscapes and offer recreational potential in many regions. The ability of farmers and land owners/managers to maintain and manage grasslands for ES delivery depends on local conditions (including soil type, slope and prevailing weather conditions), farm type (e.g. dairy, beef, sheep, goat), the profitability of the farming business and any financial support/incentive provided by rural development programmes.

Grazing livestock farming systems, which often include a significant proportion of PG, produce food products and other services that contribute to a balanced and nutritious diet (Salter, 2017) and support vibrant rural communities. In order for these systems to be environmentally, economically and socially sustainable they cannot be reliant on imported concentrates and feeds, thereby minimising their overall carbon and land footprint; and supporting biodiversity on and off the farm. They must also be resilient to climate change and receive a fair price for the produce and the range of environmental services they provide. At an appropriate scale and stocking rate, matching production to the carrying capacity of the land, they can help meet current climate (IPCC, 2019) and biodiversity (IPBES, 2019) challenges and contribute towards achieving many of the FAO Sustainable Development Goals (FAO, 2015).

However, PG is under threat from land use change, climate change, abandonment and intensification, resulting in a trend for a decrease in PG area across Europe. Across the EU-6 (Belgium, Denmark, Germany, France, Italy and Luxembourg), between 1970 and 2010, PG losses were estimated at around 30%, i.e. a loss of c.7 million ha (European communities, 2000 & Eurostat 2017). More recently from 2010 to 2013, the total area of PG across the EU-27+UK reduced by c.2% (i.e. c.1.3 million ha); with reductions in land area measured in most countries (Eurostat 2017).

There is therefore variation across Europe in the importance of PG within farming systems, the dominance of different livestock species, stocking rates (generally higher in Atlantic regions and lower in Mediterranean and boreal regions) and exploitation regime in terms of whether grass is predominantly grazed or cut. EC FADN data and survey data from 352 European grassland-based farms indicate that farms dominated by beef cattle are more widespread than dairy farms and that the beef farms are generally associated with moderate stocking rates (0.5-1 LU/ha) and a significant proportion of PG on farm (50-70%). Dairy farms are associated with higher stocking rates (> 2 LU/ha), a lower proportion of PG (<10%) and predominantly cutting systems. Survey data gathered by the Horizon 2020 SUPER-G project (www.super-g.eu) will also provide information on the importance of imported feed in these systems.

In summary, PG are under threat in Europe, but are important within many livestock grazing systems. There is an urgent need to assess the sustainability of grassland-based farming systems, and to recognise and value the ES they provide, so that the right policies are put in place to support farming systems that provide net positive environmental services for society.

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