



For the public good

Data from the **TEAGASC** National Farm Survey is helping researchers to learn more about social and environmental sustainability on Irish small farms.

A recent report from the Teagasc National Farm Survey (NFS) on the sustainability status of small farms considered three dimensions: economic, environmental and social. Based on a special survey conducted in 2015, data were collected on a representative sample of farms producing an annual standard output of €8,000 or less (the equivalent of 14 suckler cows or 55 sheep), of which there are 52,000 farms nationally. Results indicate that three-quarters of small farms earned a farm income of less than €5,000. However, many of these farms are operated on a part-time basis with almost 90% of such households in receipt of an additional income source. Despite the low levels of profitability on these farms, 85% plan to continue farming, and as they are strongly embedded in the local economy they play an important role in supporting rural employment, managing the natural environment and maintaining the social fabric of rural areas. The existence of small-scale farms is not a uniquely Irish phenomenon; indeed, nine out of ten farms within the EU are less than 20 hectares. The recent communication from the EU Commission, 'The future of food and farming', reiterates the multifunctional benefits of farming to the wider rural economy, and the future objectives of the Common Agricultural Policy (CAP) are: to foster a smart and resilient agricultural sector; to bolster environmental care and climate action; and, to strengthen the socioeconomic fabric of rural areas. The shape of future policy reform will likely result in more targeted payments towards supporting smaller farms given their multifunctional nature and the important role that they play in the provision of public goods.

Environmental sustainability

As stewards of the countryside it is important to demonstrate the environmental impacts of farming on air, soil and water quality, as well as its contribution to biodiversity. Two key indicators, namely farm-level greenhouse gas (GHG) emissions and farm nutrient balances, are considered here. GHG emissions were calculated using Intergovernmental Panel on Climate Change (IPCC) methodologies, as employed in the Irish National Inventory Report. Key farm structural and management details, such as livestock number and age and fertiliser

applications, are multiplied by relevant coefficients to estimate agricultural GHG emissions. As shown in **Figure 1**, small farms tended to have lower GHG emissions per unit area, for all systems. This is a result of small farms generally having low stocking rates, leading to low per hectare emissions from enteric fermentation and animal manures. These farms are managed more extensively, with lower fertiliser and lime applications. However, when expressed per unit of animal liveweight produced, small farms are relatively less emissions efficient, with greater emissions per unit of output. This is largely as a result of slower animal weight gain and longer animal lifespans on smaller farms. It should be noted, however, that the GHG accounting methods employed here do not include emissions from off-farm imports ('embedded emissions' in purchased fertilisers and animal feeds), which are generally higher on more intensive farms.

As stewards of the countryside it is important to demonstrate the environmental impacts of farming on air, soil and water quality, as well as its contribution to biodiversity.

Farm gate nutrient balances are calculated by subtracting the nitrogen (N) and phosphorus (P) contained in all agricultural outputs (e.g., livestock and livestock products sold) from all farm inputs (e.g., fertilisers, animal imports and purchased feed). This provides an estimate of the nutrient surpluses applied to each farm. High nutrient balances can indicate a risk of losses to water bodies, while very low nutrient values (near 0) can indicate a risk of degrading soil quality. Small farms generally had lower N balances on a per hectare basis, especially on sheep farms, indicating a lower risk of N pollution to local water bodies. Expressing the nutrient balances on a per unit liveweight basis shows

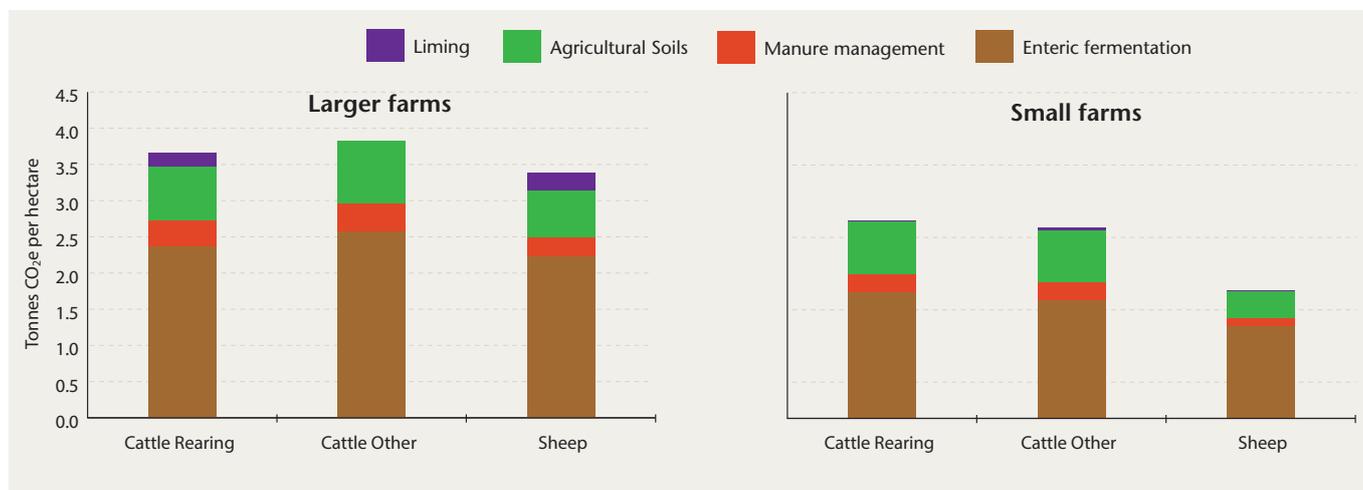


FIGURE 1: Agricultural greenhouse gas emissions per hectare. Source: Teagasc National Farm Survey.

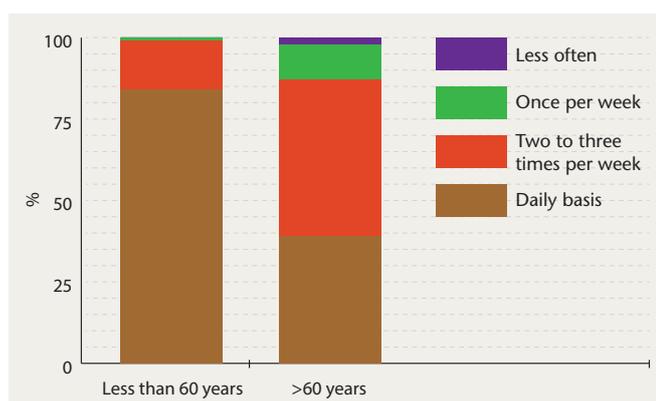


FIGURE 2: Frequency of contact with persons outside of household. Source: Teagasc National Farm Survey.

that smaller farms achieve greater animal weight gains for the quantity of excess nutrients applied, despite having lower outputs per hectare. This is because small farms are generally low-input, grass-fed systems, with lower N and P imported in animal feeds and lower fertiliser applications.

Social sustainability

Challenges exist around the measurement of social sustainability given its subjective and broad nature, but the importance of issues such as rural viability and quality of life are increasingly recognised. Work is ongoing to build on the current suite of indicators considered within the Teagasc NFS across three broad categories: farmer well-being; rural well-being; and, animal well-being. The small farms survey revealed some stark statistics around the demography of these households, with one in four farm operators living alone and one in three aged over 65. Survey results showed a significant age effect around rural isolation, sense of security and access to services. **Figure 2** illustrates that 11% of farmers aged over 60 have contact with people outside of their household only once per week, compared to just 1% of younger farmers.

Similarly, farmers' perceived sense of security in their home is also negatively correlated with age, with 17% of older farmers reporting deterioration in their sense of security in the past five years compared to

only 3% of younger farmers. Likewise, older farmers were more likely to report difficulties around access to services including medical, public transport and Garda stations. The continued development of indicators within the Teagasc NFS to capture the multidimensional nature of farm sustainability is crucial. Full report available at: <https://www.teagasc.ie/publications/2017/small-farms-survey.php>.

Acknowledgements

Many thanks to Brian Moran, John Lennon and the NFS staff involved in the collection and validation of the data: A. Curley, J. Colgan, L. Delaney, P. Harnett, P. Healy and J. Robinson, and to M. Moloney for the administration of the survey.

Authors

Emma Dillon

Agricultural Economics and Farm Surveys Department, Rural Economy Development Programme, Teagasc, Athenry, Co. Galway. Correspondence: Emma.Dillon@teagasc.ie

Thia Hennessy

Professor and Dean, Cork University Business School, University College Cork

John Lynch

Agricultural Economics and Farm Surveys Department, Rural Economy Development Programme, Teagasc, Athenry, Co. Galway

Mary Brennan

Agricultural Economics and Farm Surveys Department, Rural Economy Development Programme, Teagasc, Athenry, Co. Galway

