Teagasc Sustainability Report 2017

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Summary

- Economic return and profitability per hectare was 2–4 times higher on dairy farms versus non-dairy farms.
- Emission per hectare of greenhouse gas (GHG), ammonia (NH_3) and N balances were between two and five times higher on dairy farms.
- Emissions intensity of milk production declined between 2012 and 2017.

Introduction

The recently published Teagasc 2017 sustainability report considers Irish farm production systems in terms of their economic, environmental and social sustainability. The report tracks the sustainability performance of dairy, drystock and tillage farms through data collected by the Teagasc National Farm Survey.

Results

Economic Indicators

Dairy farms show the strongest economic performance, significantly higher (2–4 times) than all other systems in terms of economic return and profitability on a per hectare basis. The farm systems are most similar in terms of market orientation, with dairy and tillage having the greatest share of output derived from the market. Dairy farms were the most economically viable followed by tillage systems as seen in Figure 1.

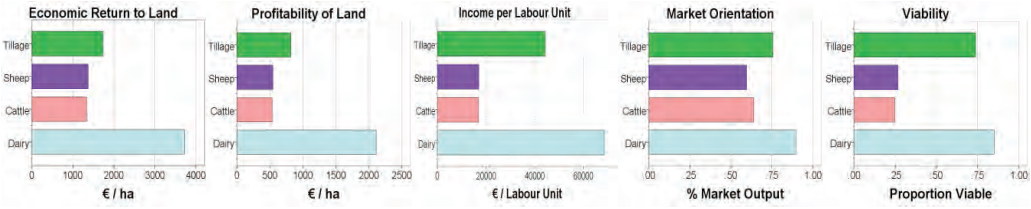

Figure 1. *Economic Sustainability: Farm Comparison 2017 (farm system average)*

Environmental Indicators

Dairy farms had the largest GHG emissions (CO_2 equivalent) on a per hectare basis, 2–4 times higher greater than the other systems. The trend was reversed for kg of CO_2 equivalent emitted per Euro of output generated. Ammonia (NH_3) emissions per hectare were significantly higher (2–5 times) on dairy farms compared to other systems. In terms of NH_3 emissions per Euro of output generated, cattle farms emitted the highest level of NH_3 (due to the generally lower levels of output) followed jointly by dairy and sheep farms. Nitrogen balances (kg N surplus per hectare) on dairy farms were 3–4 times higher than the other farm systems. Higher dairy emissions are a function of greater stocking rates, more energy intensive diets and more use of chemical fertilisers than the other livestock systems.

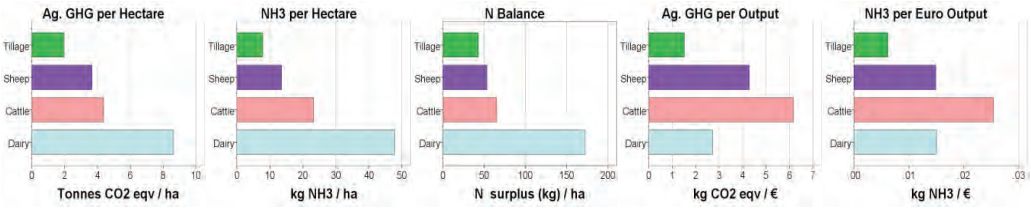

Figure 2. *Environmental Sustainability: Farm Comparison 2017 (farm system average)*

Social Indicators

Social sustainability indicators show a similar overall trend to the economic performance, with dairy and tillage farms distinct from cattle and sheep systems. The greater labour intensity of dairying is illustrated by the longer hours worked on-farm, although other farm systems are more likely to incur hours on off-farm employment. Household vulnerability (non-viable with no off-farm employment within the household) and isolation risk was lowest across dairy farms. Dairy and tillage farmers were more likely to have attained agricultural education or training versus cattle or sheep farmers, on average (as seen in Figure 3).

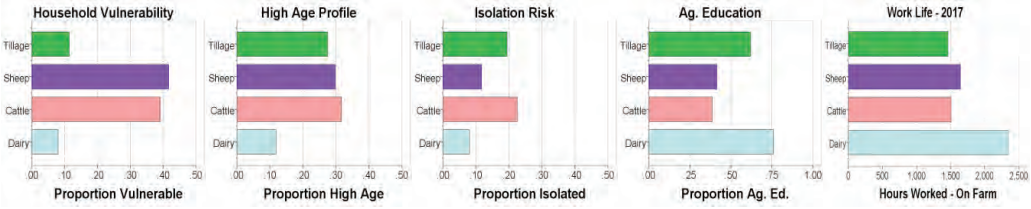

Figure 3. *Social Sustainability: Farm system Comparison 2017 (farm system average)*

Emissions Intensity

Figure 4 illustrates that kg of CO_2 equivalent and NH_3 per kg of Fat and Protein Corrected Milk (FPCM) (standardized to 4% fat and 3.3% true protein per kg of milk) followed a declining trend between 2012 and 2017 on a three year rolling average basis. Additional milk output post milk quota has been produced at a lower emissions intensity.

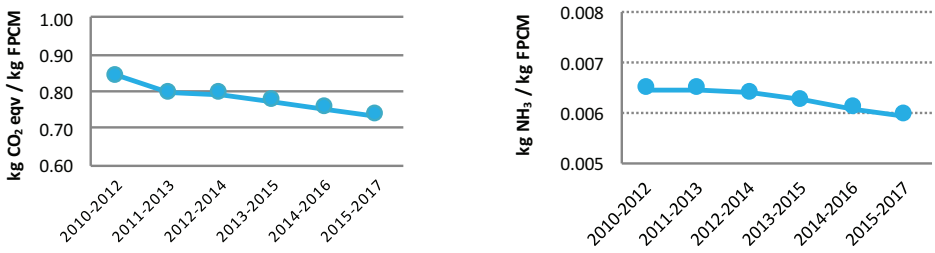

Figure 4. *Kg of CO_2 equivalent and NH_3 per kg FPCM (Dairy Farms)*

Conclusions

Dairy farms in general tended to have higher economic and social sustainability but also higher levels of absolute environmental emissions due to the greater production intensity on these farms. While emissions intensity of milk production has improved, absolute emissions on dairy farms have increased over the study period.