Assessment of Walloon dairy farms eco-efficiency using Data Envelopment Analysis and easily-accessible environmental and economic indicators: a preliminary study

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Achieving economically viable and environmentally friendly food production is a key challenge today. In this context, the aim of this study was to (i) analyse the economic and environmental efficiency (i.e., eco-efficiency) of a sample of specialised dairy farms in the Walloon region of Belgium; and (ii) to identify key management factors that differ between efficient and inefficient farms. Eco-efficiency was estimated with the productive efficiency benchmarking method Data Envelopment Analysis (**DEA**). DEA is a well-known technique for measuring the relative efficiency of comparable decision-making units using several inputs to produce one or more outputs. In our study, input and output variables were selected based on their economic and environmental relevance, as well as on their availability in the accounting database of the Walloon Breeding Association (awé). The chosen DEA inputs and output included economic-oriented variables such as fat and protein corrected milk yield and simple environmental indicators like land use, livestock units, fertiliser and pesticide application, purchased feed and on-farm energy use. Preliminary results on 174 dairy farms in 2017 suggested contrasting levels of eco-efficiency in our sample. Hypotheses concerning the determinants of eco-efficiency will be tested. The findings of this study will help inform policy-making towards dairy farm management that can increase dairy production at the least environmental costs.