Assessing the public goods provided by organic agriculture: lessons learned from practice

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Key words: sustainability, environment, indicators, benchmarking

Abstract

The role of farms as providers of public goods has long been recognised, and measuring performance in this area is of increasing interest to policy makers, in light of the approaching Common Agricultural Policy reform. The Organic Research Centre has been working on this topic in recent years, through the development of sustainability assessment tools. The latest outcome from this process is a 'Public Goods' assessment tool, developed through a Natural England funded project which aimed to evaluate the benefits accruing from organic management and entering into an Organic Entry Level Stewardship (OELS) agreement. This paper describes the development of the Public Goods (PG) tool, and what has been learned in the process.

Introduction/Problem

The measurement of the 'public goods' provided by agricultural systems, has been viewed as an increasingly important area within the international policy debate (Zander *et al*. 2007). The approaching Common Agriculture Policy reform has also highlighted the need to identify these benefits, to justify support payments for agriculture (Lampkin, 2010). For organic farming, this question can be viewed as particularly important, as the positive effects in such areas as 'environment' are seen as one of the most important reasons for the financial support given to the sector, and as one of the reasons for consumers' willingness to pay a premium for organic food.

How to identify and measure the public benefits delivered by farming systems, in a valid and practical way, is an issue that the Organic Research Centre has been seeking to address through the development of sustainability assessment tools. The latest outcome from this work is a 'Public Goods' (PG) assessment tool for organic agriculture. This paper describes the development of the Public Goods tool, outlining the interactive processes involving stakeholders and and lessons learned from testing the tool with organic farmers in England.

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Background

ORC's work in sustainability assessment tools began in 2005 through the Defra project on Quality and Environmental Benchmarking for organic agriculture. This project aimed to develop a tool for organic farms to assess the performance and interaction between ecological, social and financial factors, building on previous work that had devised a sustainability audit to assess farm performance against each of the International Federation of Organic Agriculture Movements (IFOAM) principles (Measures, 2004). The Energy, Emissions, Ecology and Agricultural Systems Integration Project (EASI) continued the work in this area through the development of a detailed tool to compare farms' resource use efficiency and greenhouse gas emissions. The development of the Natural England funded PG tool led on from this work, through desgining a tool for use by an advisor, to assess the multifunctional outputs provided by an organic farm, and the benefits that accrue from an Organic Entry Level Stewardship (OELS) scheme agreement (an English support scheme for organic farmers funded through the Rural Development Programme).

Methods and approaches

At first, public goods were identified, against which the tool would assess each farm. The first stage in this process was to establish what was meant by a "public good" through a review of literature. It was found that an externality is defined as a by-product of a process that affects third parties e.g. pollution (RISE, 2009) and 'positive externality' may be said to be a 'public good' if it is non-excludable and non rival (i.e: its consumption by one person does not reduce the amount available to others) e.g. clean air, Cooper *et al.* (2009).

The literature review was followed by a stakeholder meeting involving researchers, farm advisors and policy makers, to identify the public goods which would ideally be assessed in the tool. Those selected were: soil management, biodiversity, landscape and heritage, water management, manure management and nutrients, energy and carbon, food security, agricultural systems diversity, social capital, farm business resilience, and animal health and welfare. These criteria are similar to those suggested by other authors, e.g: Cooper *et al*. (2009) suggest that the most significant public goods from agriculture are agricultural landscapes, farmland biodiversity, water quality, water availability, soil functionality, greenhouse gas emissions, carbon storage, air quality, resilience to flooding and fire, food security, rural vitality, and animal health and welfare. Similar criteria are suggested by Kuratorium fur Technik und Bauwesen in der Landwirtschaft, (2009), and National Institute of Statistics of Italy (2001).

A number of key "activities", were then associated with each public good for assessment on farm. In common with the development of the MOTIFS tool (Meul *et al*. 2008) the choice of activities was influenced by the desire for the data to be of a type that a farmer would have readily available (ie: in their farm records). Care was also taken to maintain a mixture of 'quantitative and qualitative activities', with the aim that the entire data collection and assessment could be completed in no more than 4 hours. Within the tool each activity was marked with scores between 1 (lowest mark – no benefit provided) and 5 (highest score). Some activities were assessed using several questions while others required only one. The scores for each 'public good' were obtained by averaging the scores for all its activities. These were then displayed on a radar diagram allowing farmers to see in which areas they perform well and

which areas might be improved (see Figure 1 below). The PG Tool differs from the EASI approach in that it covers a wider range of sustainability indicators. The length of time for the completion of an assessment is also much less; an EASI assessment takes at least 1.5 days of an advisor's time.

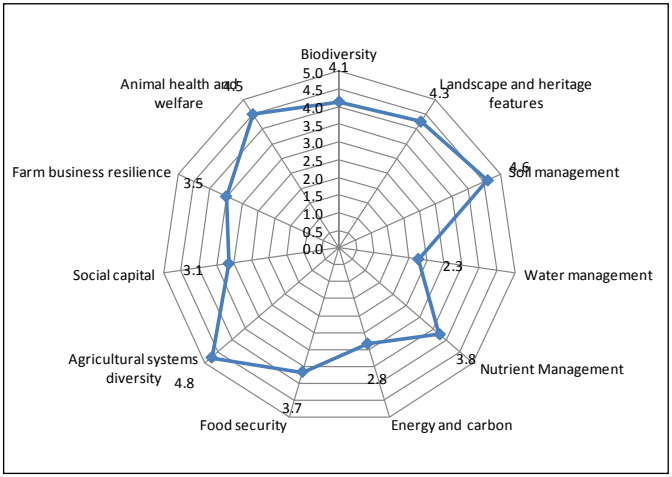

Figure 1: Spider-web diagram depicting results from a Public Goods audit

To assess the suitability and performance of the PG tool in the field a pilot assessment on forty English organic farms was carried out. The aim was to assess whether the tool was user-friendly, whether it was seen as valuable by farmers and advisors in evaluating the provision of public goods on a farm, and whether it would function on a range of farm types. The farms assessed were chosen to cover a spread over the main robust farm types as defined by Defra for the Farm Business Survey (DEFRA, 2010) and were selected with the assistance of the eight advisors who carried out the assessments. The advisors provided written and oral feedback throughout the pilot, and the farmers completed questionnaires and returned them to ORC.

Results and brief discussion:

We encountered a number of challenges in both designing the tool and carrying out assessments. In common with Halberg *et al*. (2005) we found that there was a lack of adequate reference data against which to compare performance. When selecting suitable indicators we also found that there is often a direct conflict between those that are useful, and those for which data are readily available from farm records. This was a particular problem in the areas of energy and water management. As with other studies in this area (e.g: Meul *et al*. 2008) there were also difficulties with the indicator selection process for the 'social pillar' of sustainability, partly due to the methodological challenges of assessing this area (Zander *et al*. 2007). The suitable degree of weighting of single indicators was also problematic; within the tool, all indicators were given the same weight, but this could potentially lead to misinterpretations in view of the final, visual aggregation of results.

It appears that the tool has generally increased farmers' understanding of public goods. Of the 40 farms assessed 12 returned their feedback forms, 9 of those farmers reported a higher level of knowledge and understanding of public goods after the assessment than prior to it, 8 would recommend the tool to others in its current format and 2 more would recommend it once modified.

Feedback from the advisors was was also positive, one advisor comment sums up the response "*Overall it was an interesting exercise and could be a useful tool with some tweaking*". Another advisor commented on farmers' reactions to the tool saying "*the farmer's reaction was, on the whole, very positive. They were interested in the tool and its concept and entered into discussion very freely. The radar diagram was well received with interest not only in the high scores but also the low scores and the reason for them and how they could be improved*."

Conclusions

The study illustrates that although it is difficult to measure sustainability as a whole, through the right balance of quantitative and qualitative indicators a good overview can be achieved that can facilitate improved understanding of areas of sustainability at the farm level. This was demonstrated through the positive feedback from both farmers and advisors during the pilot phase of the PG tool's development.

Acknowledgments

The authors would like to thank Natural England and DEFRA for supporting the development of the Public Goods tool and the anonoymous referees for their helpful comments.

References

Cooper, T., K. Hart, et al. (2009). The provision of public goods through agriculture in the European Union, report prepared for DG Agriculture and Rural Development, www.ieep.eu/publications/pdfs/2010/final_pg_report.pdf, (accessed 2009-08-12).

DEFRA. (2010). Definitions of Terms Used in Farm Business Management. UK, DEFRA.

Halberg, N., Van der Werf, H. M. G., Basset-Mens, C., Dalgaard, R., de Boer, I.J.M. (2005). Environmental assessment tools for the evaluation and improvement of European livestock production systems. Livestock Production Science. 96: 33-50.

Kuratorium fur Technik und Bauwesen in der Landwirtschaft. (2009). Bewertung der Nachhaltigkeit Landwirtschaftlicher Betriebe. Darmstadt, Germany.

Lampkin, N. (2010). Organic farming support and CAP reform. The ORC Bulletin. 102:2-4.

Measures, M. (2004). Farm auditing for sustainability. www. efrc.com/manage/authincludes/article_uploads/art013.pdf, (accessed 2009-08-12).

Meul, M., Van Passel, S., Nevens, F., Dessein, J., Rogge, E., Mulier, A., Van Hauwermeiren, A. (2008). MOTIFS: a monitoring tool for integrated farm sustainability. Agronomy for Sustainable Development. 28(2): 321-332.

National Institute of Statistics of Italy (2001) Agri-environmental indicators to describe agricultural sustainability. Ottowa, Canada.

RISE. (2009). Public goods from private land. www.risefoundation.eu. (accessed 2011-03-15).

Zander, P., Knierim, U., Groot, J.C.J., Rossing, W.A.H. (2007). Multifunctionality of agriculture: tools and methods for impact assessment and valuation. Agric. Ecos. and Env. 120: 1-7.