Farm Auditing for Sustainability

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ABSTRACT
Policy makers have now established sustainability as the new aim for UK farming. The development of the Farm Audit for Sustainability involved identifying the objectives of sustainable farming, based on the principles of organic farming as set out by the International Federation of Organic Farming Movements (IFOAM) and establishment of indicators to assess the effectiveness of individual farms in meeting these objectives. On-farm use of the Farm Audit demonstrated that the tool was able to provide a comprehensive assessment of sustainability of the farming system and that it is an information and advisory tool which is potentially useful in benchmarking and development of the farming operation.

INTRODUCTION
Government Policy in the UK has commenced a programme of change for British farming towards what is loosely described as sustainable farming, one which not only ensures that the production of food is a commercially viable business, but also one which delivers across a broad range of public goods and services. This policy is being driven by changes in EU policy and support and is being vigorously encouraged through the Report of the Policy Commission on the Future of Farming and Food which has been largely adopted by DEFRA. The imminent application of new support measures following the Mid-Term Review will more or less facilitate aspects of this process of change on the farm. A clear understanding of the real, practical meaning of sustainable farming on the ground is, however, lacking, although there have been efforts to identify the desirable outcomes on a national scale, e.g. *Towards Sustainable Agriculture - A Pilot Set of Indictors* (MAFF, 2000).

Organic farming is the only system of agriculture which has a track record of setting a clear aim of sustainable farming, (IFOAM Standards 2000); one which meets societies' wider objectives for farming including: human health and welfare, environmental care, resource conservation and animal welfare in what is self evidently a finite world. It achieves this through the operation of farming practices that are characterized by an emphasis on biological systems and management techniques, rather than the use of inputs which characterize conventional farming.

The Organic Advisory Service (Elm Farm Research Centre) has set up a new initiative, the Organic Systems Development Programme (OSDP), which is seeking to help farmers develop their farm management in order to better meet the overall objectives of organic farming. The OSDP, headed by Mark Measures, is working with a group of nine mixed, well established organic farms which are committed to going beyond the absolute minimum set by organic standards to better address the broader needs of society in the way in which they produce food and to progressively develop more sustainable systems.

METHODS

The literature on the use of sustainability indicators was reviewed (Bell and Morse, 1990) and existing procedures for monitoring assessed (Wackernagel and Rees 1996; Haas *et al*. 2000; LEAF, 2001; Rigby *et al*. 2001; Leach and Roberts 2002). In the light of this, a new auditing system was formulated in order to meet the needs of the farmers involved, one which assessed their achievements, through measurement as far possible and which could be applied quickly and with the involvement of a farm adviser to provide independent assessment.

Development of the Farm Audit involved a meeting with Elm Farm Research Centre staff in order to consider how the work related to their research programme, which had already identified key issues relating to sustainability and developed techniques to address these issues. This was followed by a meeting with the farmer members of the OSDP to assess the relevance of the approach and to engage their input. The Farm Audit was conducted on five farms during routine advisory visits. During the following year the Farm Audit was used as part of on-farm group meetings to highlight the performance of the host farm and to refine the procedures.

Creation of the Farm Audit required the development of an audit procedure and a spreadsheet to calculate farm-gate energy and nutrient balances, preparation of a farm record sheet and collation of standard data for comparative purposes. The latter is still in the process of compilation as more farms are audited.

The Farm Audit identifies all the key objectives of sustainable farming, it does this by focusing on the key criteria or objectives set out by the IFOAM Standards and then aims to select indicators for each criterion which can be measured, or some meaningful assessment made, of the degree to which the farm is sustainable. It does not therefore endeavour to asses every component of every criterion, such an approach risks being excessively time consuming, neither does it focus on monitoring activities (much of this is already being undertaken by the organic certification procedures) but instead attempts to monitor the outcome of the farming system and practices.

AUDIT PROCEDURE

The auditing procedure summarized in Table 1 was used on all farms

AUDITING IN PRACTICE

The application of the Farm Audit was relatively straightforward, requiring between one and two hours to conduct, plus a variable amount of time by the farmer to access the information which was generally readily available. The use of benchmarking for factors other than those directly related to financial performance is unfamiliar to most farmers. However, the Farm Audit was effective in highlighting those areas in which a farm was particularly effective. This was very encouraging for the farmer concerned, for example one farmer achieved a veterinary cost of 20% of the national average, which was rewarding and indicated that there were farm practices from which others could learn. It also highlighted some shortcomings which was of real help in focusing the attention of the farm owners, manager and adviser. It might be argued that these shortcomings would have been identified anyway, but the Farm Audit does help prioritize areas for development.

Table 1. Auditing procedure

Objective	**Monitoring to Identify Performance**
Maintain a closed system	Nutrients imported on farm as a % of total exported
	Feedstuffs imported as % of total consumed Subjective assessment of manure plan and management
Maintain soil fertility	Annual soil analysis of the same 2-3 fields
Avoidance of pollution	Nitrate leaching scored on the basis of key risks Ammonia and methane risks Identify excessively high phosphate soils Identify and quantify pesticide use Identify and quantify farm waste Identify other risk areas
Food production	Energy output per hectare Quality monitored through sales data
Non-renewable resources	Energy is expressed as % of energy out Identify use of renewable energy Water sourcing, recycling and efficiency of use
Livestock management	Average age of herd Health: Mastitis incidence per 100 cows Medicine bill per head Other, e.g. distance to slaughter
Social function	Profitability of the farm Number of labour units per hectare Staff training Community engagement
Use of appropriate technology	Observations on both appropriate technology such as minimal tillage, reed bed, composting, and also inappropriate actions
Decentralization	Information where available on input miles and product miles
Biodiversity and landscape	Conservation plan in place and acted on. Presence of ‘red or amber list’ bird species Diversity: number of crop and stock types and % permanent pasture

The use of the energy and nutrient budgeting tool is in its infancy as the facility was not available at the start of the programme; however, for the first time it is providing farmers with some indication of how efficient they are. Understanding their energy efficiency and improving it is something which this group of farmers is keenly interested in. Early indications are that they are already relatively efficient due to their non-use of nitrogen fertilizers but there is clearly great scope for improvement and this information will begin to provide them with data by which to measure their progress.

An important outcome of the work has been to focus farmers' attention on the impact of their day-to-day practices on sustainability, it has also identified major shortcomings in information available to farmers and provides a useful means of identifying research needs.

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REFERENCES

BELL S. and MORSE S. (1990) *Sustainability Indicators - Measuring the Immeasurable?*

HAAS G., WETTERICH F. and KOPKE U. (2000) Life cycle assessment of intensive, extensified and organic grassland farms in southern Germany. *Proceedings 13th IFOAM Conference p157.* Earthscan Publications Ltd.

IFOAM (2000) Basic Standards for Organic Production and Processing.

LEACH K.A. and ROBERTS D.J. (2002) Assessment and improvement of the efficiency of nitrogen use in clover based and fertilizer based dairy systems. 1. Benchmarking using farm gate balances. *Biological Agriculture and Horticulture,* 20, 143-155.

LEAF (2001) *The LEAF Audit.* Stoneleigh, UK: LEAF.

MAFF (MINISTRY OF AGRICULTURE FISHERIES AND FOOD) (2000) *Towards Sustainable Agriculture – A Pilot Set of Indicators.*

RIGBY D., WOODHOUSE P., YOUNG T. and BURTON M. (2001) Constructing a farm level indicator of sustainable agricultural practice. *Ecological Economics,* 39, 463-478.

WACKERNAGEL M. and REES W. (1996) *Our Ecological Footprint – reducing Human Impact on the Earth*. New Society Publishers.