

Factors Affecting the Profitability of Organic Farms

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The object of the study was to provide information for the MAFF R&D programme policy objective to improve the agronomic efficiency and profitability of organic farming by following a four-pronged approach to get the most out of limited data (low numbers of farms in each category and only two years data).

European studies were reviewed to find key profitability factors for organic farms, and to discuss the relevance of appropriate measures of profitability for organic farms.

Data analysed

Whole farm data of 26 farms (1995/96 and 1996/97) and some enterprise gross margin data (including some 1997/98 data) for organic farms of six different types were analysed. The small sample size of some farm types limited statistical significance, but important trends were identified and discussed.

Literature review

The literature review identified the three main areas influencing the success of farms as production, finance and management related. Crop yields are influenced by soil and climate, rotation (including root crops, legumes, and stocking rate), nutrient status (P&K particularly for forage crops) and time under organic management. Many are similar to factors important in conventional agriculture.

There is less research on organic animal production and attention has not focused on the factors influencing production levels. However, stocking rate and milk yield have been found important to the success of livestock farms. Important financial factors were access to marketing outlets and premium prices as well as subsidy payments. The implication of labour use and costs and other fixed costs are less well researched, but their effect varies between farm types and is influenced by enterprise mix.

The literature identified three main managerial influences: personal and business goals, time under organic management, skills and management ability. Personal goals affect the management of all farms, and influence the decision to convert to organic methods.

Farm data analysis

The income variation between organic farm types per hectare showed a similar trend to conventional farms (horticulture > dairy > mixed, cereal and general cropping > cattle and sheep) and clearly highlights the difference between farm types in income levels per hectare.

Occupiers Net Income per hectare (ONI/ha) was used as a measure of profitability, as it offered the best compromise between the true financial position of the farms, and comparability between farms. Correlations of output and input variables with ONI/ha were strongly affected by farm type, and often reflected the intensity of the enterprises.

Significant positive correlations between cropping output and ONI/ha across all farm types indicated the importance of crop output for a wide range of organic farm types. This was not the case with livestock output. Correlations of the elements of some crop gross margins with each other and with ONI confirmed the importance of crop yield and premium prices.

The analysis of dairy gross margins confirmed a strong relationship between milk yield, stocking rate and gross margin per hectare and highlighted the importance of forage yield and utilisation (UME) for financial success.

Factor analysis was used across all the farm types to reduce the large number of variables into underlying synthetic factors. Three factors were identified that can be associated with *intensity*, *scale*, and *integration*. The correlation of these synthetic factors with income variables in the pooled data for two years, confirmed a negative influence of the factors *intensity* and *scale* on farm income per hectare. The strongest and positive influence was the *integration* factor, which reflects the integrating forces among the enterprises.

Analysis of arable farms identified additional factors associated with *experience*, *diversity* and *agri-environmental payments*, leading to the

overall conclusion that factors of scale, intensity, experience, integration and diversity are responsible for some income variation.

On cropping farms there was a positive trend between total output and land in cropping in 1996/97, possibly due to cropping patterns that include high value crops (organic potatoes, non-organic oil seeds).

The negative trend with livestock output (possibly part of the conversion process), highlights possible problems with diversity. The significant positive correlations between ONI/ha and variable costs, running costs and paid labour suggests that farms spending more on seeds, labour and equipment, were more profitable.

The mixed farm group was small and very diverse, but there was an important positive trend between cropping output (including field vegetables) and ONI/ha.

The five dairy farms had the weakest relationship between whole farm gross margin and ONI/ha of all farm types and the greatest inconsistency in trends between variables and ONI/ha over the two years. The range of ONI/ha increased in 1996/97, and the farms achieving the higher ONI differed between years.

The largest group of ten lowland cattle and sheep farms had a wide variation in inputs, outputs and incomes. Several farms had a negative ONI. The tight input:output ratios indicate the importance of low input costs for financial success; confirmed by the significant negative correlation between ONI/ha and variable costs in 1995/96. Subsidies contributed a high proportion ($x=25\%$) of income and there was a strong trend between subsidies and ONI/ha.

The small number of upland cattle and sheep farms in the group limited the scope for statistical analysis. The dependence of these farms on subsidies was shown by the significant positive correlation in one year and the strong trend in the next, between ONI/ha and subsidy payments.

The five horticulture holding were a small, diverse sample. Increased spending on labour largely accounted for decreased income in the second year. There was a strong correlation of ONI with inputs and outputs and between total labour costs and output.

Case studies

Farms selected for the case studies (two dairy, one mixed, one beef and sheep) were those that were financially successful in 1996/97 relative to other organic farmers. All farmers felt that husbandry skills, technical aspects of organic management, and attention to detail were important to their success.

The farmers took professional pride in being good organic farmers and ranked the improvement of crop and animal production as their most important objectives. Knowledge had been gained through experience and/or training and the use of consultants. One farmer noted problems with maintaining the required attention to detail to all enterprises.

Marketing efforts made by the cattle and sheep and mixed farmers contributed to their success. In each case, appropriate rotations and farming systems were working well.

The farmers identified some technical issues which they considered would benefit from research: these included parasite control for sheep, potato blight, weed control (particularly in spring cereals), seed predation by birds, and dry cow mastitis.

Modelling

Comparison of the model's 1995 and 1997 predictions with survey data confirmed their validity, and highlighted the importance of premium prices, the enterprise mix and potential economic advantages of more specialised systems.

The potential impact of technical improvements on overall profitability of organic farms was investigated by changing the yield assumptions. The benefit of an assumed 10% increase in yield is greater for livestock farms (25-33% increase in whole farm GM) than for cropping farms (13-21% improvement). The modelling work showed that most organic livestock systems (apart from hill livestock) appear less sensitive to organic premium changes than arable and cropping systems.

Changes in the enterprise mix assumptions for the models of cropping farms clearly support the potential contribution of high value crops to overall profitability, but labour and fixed cost implications were not investigated.

Changes in the enterprise mix of the models of dairy farms by increasing dairy cow numbers and reducing the cereal area confirmed the economic advantages of specialisation of organic dairy farms.

Changes in enterprise mix assumptions for the models by increasing sheep numbers show a significant gross margin advantage, possibly attributable to the relatively high level of subsidies for the hill sheep production. However, this change has adverse implications for parasite control in mainly sheep-based systems.

Conclusions

Research recommendations included the following areas:

- the importance of productivity as a profit factor on organic farms. The need for research effort contributing to the improved yield, quality and efficiency of production for crops, forage crops and livestock, and targeting of inputs, is highlighted;
- technical knowledge and management ability were obvious in the best performing farms. This highlights the need for investment in training and dissemination of technical information;
- the importance of premiums for the financial success of some farm types and the need for better data on the labour and cost implications of realising the premium through various marketing channels;
- the importance of enterprise mix and the potential role that high value crops might have in increasing profitability, but technical details and resource implications need to be investigated;
- the need for further research in the area of labour requirements and employment implications of organic management for different enterprises and farm types;
- the need for clearer information on the efficiency of input use and investments;
- the need for a better understanding of the economic benefits of enterprise diversity and integration versus the benefits from economies of scale and specialisation, including an assessment of risk

and uncertain issues and the implications of policy changes on this dynamic.

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