

Assessing the sustainability of EU organic and low input dairy farms

The EU funded Sustainable Organic and Low Input Dairy Systems project (SOLID), aims to support the improvement of sustainable production on organic and low input dairy farms. 10 farms in each of 9 countries participated in an initial interview based assessment. **Katharine Leach** discusses the findings.

SOLID is a wide ranging project with 20 partners. ORC and the organic milk co-operatives, OMSCo and Calon Wen, as small medium enterprises (SMEs), are the UK partners specifically involved in the 'Participatory Research' aspects being carried out on commercial farms, rather than at research institutes.

As a first step in considering where sustainability might be improved, and identifying research needs, interviews with farmers were carried out and a computer based tool was used to assess farm sustainability according to 11 different components or 'spurs' (Figure 1). These farms were chosen to illustrate examples from the range of farms associated with the 'SME' partner in each country.

We present below some results from the UK (Ten OMSCo and seven Calon Wen farms), Austria, Finland and Denmark. Other countries - Romania, Italy, Spain, Greece and the Netherlands - are also involved in the project, but since these countries have very different production systems from the UK they are not covered in this article.

How the farms differ

Table 1 shows some characteristics of the farms studied, giving an idea of aspects of the organic dairy sector in these four countries. The UK farms included extensive spring calving grazing based systems, higher input winter milk producers, farms with diversification into tourism and on-farm milk processing, small family farms, and larger units employing outside labour.

In Austria, 2/3 of milk is produced in mountain areas. The farms studied were all members of an organic co-operative with 40 members, and were very small farms, located in the mountains, providing milk for processing into cheese. Concentrate inputs are very low in these traditional Alpine systems.

Danish farms were members of the Thise Dairy Company, a pioneer of organic milk production in the country. The average Danish farm area was similar to that of the UK farms studied, while herd size had a wider range, and slightly lower average, than the UK selection.

In Finland, all but two of the nine members of Juvan Luomu Ltd, the only totally organic dairy in Finland, participated. These producers had relatively small herds compared with the UK, but in fact were about twice the average size for Finnish organic dairy farms, in terms of both area and cow numbers. In contrast with the small Austrian herds, they reached much higher yields.

The Austrian farms chosen generally had several different enterprises, usually including forestry. No farms in the Austrian group had any arable land, but Finnish, Danish and UK farms had varying amounts, with least in the UK where a considerable proportion of the land was in short term grass leys (three years old or younger). On the Austrian mountain farms almost all grass was permanent pasture, while this was uncommon in Denmark and Finland. Most UK farms had some permanent pasture.

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Table 1: Characteristics of farms included in the sustainability assessment in each country – mean (range) values

Attribute	Unit	Austria	Denmark	Finland	UK
Farms	n	12	10	7	17
SOLID SME Partner organisation		Sennerei Hatzenstätt	Thise Dairy	Juvan Luomu	OMSCo & Calon Wen
Time in organic farming	y	21 (20-39)	16 (12-28)	17 (10-22)	11 (3-30)
Farm size	ha	21 (12-31)	221 (50-512)	139 (18-414)	204 (46-422)
Herd size (adult cows)	n	13 (1017)	161 (36-480)	47 (9-124)	151 (65-378)
Stocking rate and land use					
Grassland stocking rate	GLU/for ha	0.9 (0.6-1.4)	1.5 (0.9-2.3)	0.8 (0.5-1.20)	1.6 (1.1-2.5)
Proportion of area in arable	%	0	30 (11-44)	30 (6-44)	9 (0-42)
Proportion in perm. pasture	%	94 (62-100)	12 (2-22)	4 (0-16)	45 (4-100)
Milk production					
Milk sales	l/cow/yr	4576 (2352-6375)	6444 (4554-8750)	7765 (6400-10071)	5603 (4125-7368)
Milk price	€/l	0.48 (0.45-0.58)	0.42 (0.36-0.49)	0.57 (0.51-0.63)	0.34 (0.31-0.40)
Animal housing: % of herds...					
...outdoors day & night during grazing season		33	80	28	100
...kept tethered		50	0	14	0
...kept in straw yards (loose housing)		0	70	14	22
...kept in cubicles		50	30	72	78
Labour input					
Annual labour units (ALU)	ALU/100ha	3.8 (2.0-6.9)	1.2 (0.6-2.3)	2.3 (0.6-5.5)	1.9 (0.3-6.5)
Milking cows per ALU	n/ALU	18 (12-30)	72 (36-105)	25 (9-53)	61 (24-145)

Stocking rate of the forage area was highest for the UK and Denmark and lowest for Austria and Finland. The majority of the Finnish and Austrian herds only grazed during the day, and three Finnish farms had a grazing season of less than six months, whereas for all other farms in the study the grazing season was six months or more.



Austrian mountain dairy farm



The level of milk production also varied, the mean being lowest in the Austrian group, followed by the UK, Denmark, and then Finland. Austrian farms consistently used little or no purchased concentrate while levels were higher, although variable, in each of the other three groups. The Finnish farms included some that were relatively small but high in purchased feed inputs, in contrast to the Austrian farms which were all small and low input.

Labour input per cow was very high in Austria and Finland compared with Denmark and UK.

Variations in sustainability measures

The extent to which sustainability measures can be satisfactorily assessed using this type of interview based 'tool' is limited. Nonetheless some interesting differences between countries were identified (Figure 1).

The most consistent strengths indicated for the UK were in animal health and welfare, and, perhaps, to farmers' surprise, farm business resilience. Austria and Finland had rather lower scores for health and welfare, influenced by the fact that some cows are kept tethered. Even when scores were high, farmers in each country were generally interested in further improvements in health and welfare. Business resilience in Finland was similar to that in the UK, with Austria and Denmark showing a wider range.

The remaining 'component spurs' showed considerable variation among UK farms. Water management varied both within and between countries, reflecting the availability of water from precipitation. Soil management, nutrient management and energy and carbon use also showed a wide range of scores in all countries, indicating that there is potential for improvement in all these areas.

As an example of variability in nutrient management, nitrogen surplus (N imported to the farm – N captured in products) ranged from 43 to 179 kg/ha on the UK farms. Cropping patterns, feed use efficiency and manure management might be adapted to achieve improvements.

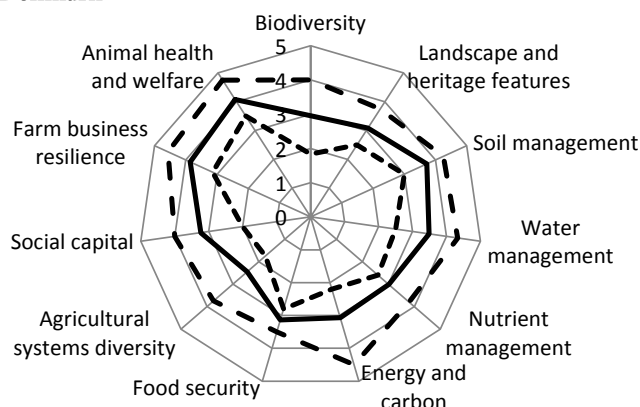
When UK herds were divided into those above and below 100 cows, the average score of the larger herds was lower for landscape, soil management and energy and carbon use but higher for farm business resilience.

Moving forward with R&D

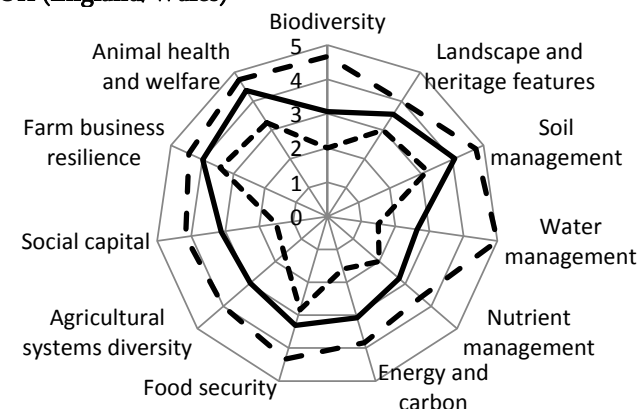
Carrying out this exercise has led to discussions of various aspects of sustainability with farmers individually and in groups. The outcomes of these discussions are being used to develop on-farm research in each country. A common broad theme across several countries is more economic feed and forage production on farm and more efficient utilization of forage.

In the UK some case studies of different systems achieving good milk production from forage are a starting point. UK farmers also expressed a need for better understanding of the soil, seeing this as fundamental to the system and to overall sustainability. Particular issues included how to encourage soil biological activity, and cope with the risk of declining P levels. Ideas are also moving forward for a trial exploring the use of more diverse swards for grazing.

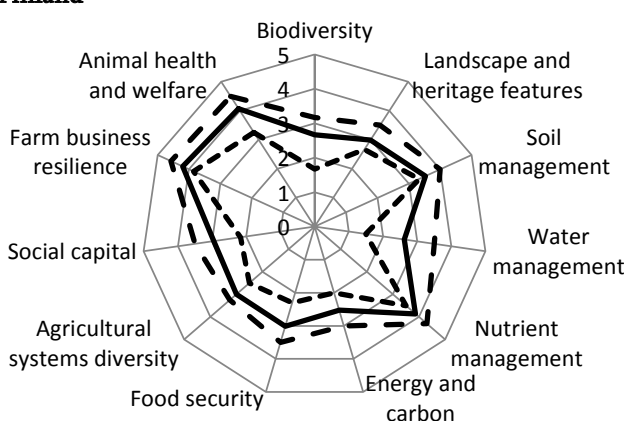
Denmark



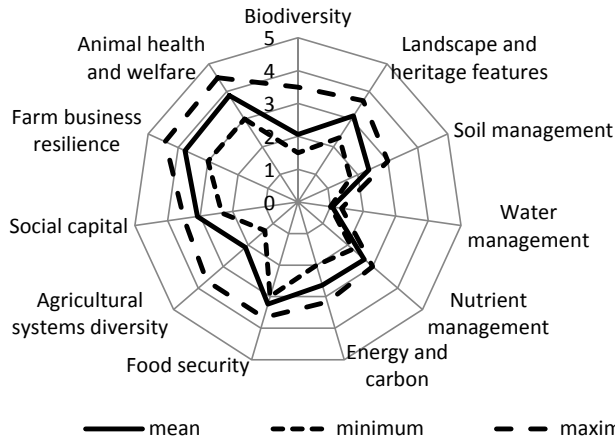
UK (England/Wales)



Finland



Austria



— mean - - - minimum - - - maximum

Figure 1: Mean, minimum and maximum scores for sustainability indicators on dairy farms in four EU countries (higher score suggests greater benefit)