Organic farming in the uplands – appraisal of a development programme

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There is a widespread assumption that conversion of livestock production systems in the uplands can be achieved with minimal change to existing hill farming practices and yet still deliver environmental and financial benefits. This assumption needs to be examined because conversion of upland farm enterprises poses particular issues for organic farming, Frost (1999). The certifying bodies acknowledge that some of these issues are not adequately covered by the current standards for organic agriculture. The development of a hill farming organic system at Pwllpeiran was established to provide evidence for such an appraisal, Powell (1999).

Pwllpeiran is a 1120 ha ADAS research farm located in the Cambrian Mountains Environmentally Sensitive Area in mid-Wales. Conversion of a 111 ha organic unit started in 1993 with the objective to develop a suckler beef and sheep system complying with both UKROFS organic standards and ESA management prescriptions. The unit achieved full organic status in spring 1995. The organic unit comprises semi-natural rough grazing, mountain re-seeds and improved grassland in a similar proportion to the farm as a whole. It supports 10 spring calving Welsh Black cows and 166 Hardy Speckle Face ewes. The stocking rate on the organic unit is 68% (originally 60% in 1993) of the conventionally farmed area, and it has a higher cattle to sheep ratio than on conventional farms locally. Expressed in livestock units per hectare (LSU/ha), the proportions are cattle 35%, sheep 65%.

Table 1 - Land area in the Pwllpeiran organic unit (ha)

Semi-natural rough grazing	47.1
Mountain re-seeds	39.9
Improved grassland	24.5
(Suitable for forage conservation)	(9.1)
Total	111.5

Monitoring of the organic unit provides the basis for comparisons with the conventionally farmed flock and herd at Pwllpeiran in respect of environmental benefits, animal performance and health, and financial performance.

Appraisal of the Pwllpeiran Organic Farming Project

Grassland and forage

Without inorganic N inputs a white clover percentage of 25% in swards is necessary to fix nitrogen at rates equivalent to 280 kg N/ha in the lowlands and up to 150 kg N/ha in upland swards. To this end at Pwllpeiran the silage conservation field, Cae Felin (6.2 ha), was reseeded in 1994. Samples taken from the silage aftermath in September 1995 (prior to sheep grazing) showed that 44% of the herbage dry matter came from white clover. In the same year on a dry matter basis, clover formed 6.6% of the herbage in Far Brignant (2.9 ha) compared with 0.5% for the adjacent conventionally managed paddock. Generally, results showed an initial increase in percentage clover on the improved grassland in the organic unit over the period of the project though there was a marked decrease in clover content in Cae Felin in 1999, 5 years after the re-seed.

Environmental benefits were assessed by changes in botanical composition of the swards. An overall increase in plant species was recorded in the improved grassland and mountain re-seeds (mosaics), with only minor fluctuations in heather cover on the semi natural rough grazing.

Stocking rates for the organic unit were originally chosen so that a target of 95% of the annual feed supply should come from grassland in the unit. Herbage as assessed by sward height fell during conversion, in 1994 and 1995, but recovered to satisfactory levels by 1997 and 1998. A fall in mean sward heights - associated with the clover crash in Cae Felin - was recorded in 1999.
Forage production mirrored herbage availability. The organic unit is self sufficient for silage at DM 3.0 t/ha. The highest yield of DM 3.2 t/ha was obtained in 1996, the lowest yield of DM 2.4 t/ha in 1999. As pasture improvement by re-seeding involves a degree of disruption to grassland management that can be critical in an upland farm like Pwllpeiran, current work is experimenting with techniques of over-seeding to improve grassland and maintain satisfactory clover content.

Livestock and financial performance

Calf and lamb performance has been similar to conventional management, whilst ewe and cow condition remained satisfactory. Although a clean grazing system could not be established, anthelmintic use fell. Mineral deficiencies, confirmed by blood tests, have been treated with permitted supplementation.

Analysis of financial performance showed improved gross margin/ha for the organic unit. For the first time in 1998/99 the organic farming unit outperformed

the conventional results without taking into account the extra income from ESA payments. This reflected the premium prices commanded by organic lamb and beef and the collapse of the conventional market.

Table 2 - Financial results from the 111 ha organic unit at Pwllpeiran

System	Gross margin / effective ha	
	1997/98	**1998/99**
Organic	163	184
Conventional	199	176
Organic + ESA Payments	230	252
Conventional + ESA Payments	230	196

Conclusion

Appraisal of the project indicates that organic beef and sheep production can be a viable option in the uplands. Long term maintenance of clover content, the relationship between organic production, environmental conservation and veterinary treatment of livestock remain issues that require longer term study.

References

Frost, D. (1999) Assessing the organic option. *Grass Farmer* No 64.
Powell, T. L. (1999) Developing organic farming in the uplands 1998/99. ADAS Pwllpeiran

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