Converting to organic farming

SAC

Technical Note

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Consumer concern over the way food is produced, the effect of farming methods on the environment and animal welfare, and the healthiness of food, is increasing. This is reflected in a growing demand for organic food, with 75% of UK households making an organic food purchase during 2000. Within Europe, concern about agricultural surpluses and environmental damage has led to financial support from the EU and national governments to encourage more farmers to convert to organic farming. Statutory support for agriculture may be increasingly linked in future to the adoption of environmentally friendly systems of production such as organic farming.

Principles of organic farming

Organic farming is based on enhancing the natural biological cycles in **soil** (e.g. nutrient cycling in the soil), **crop** (e.g. encouraging natural predators of crop pests) and **livestock** (e.g. development of natural immunity in young animals); on building up soil fertility through the use of nitrogen (N) fixation by legumes and enhancing soil organic matter; and on avoiding pollution. Thus the aim is to work **with** natural processes rather than seek to dominate them, and to minimise the use of non-renewable natural resources such as the fossil fuel used for the manufacture of fertilisers and pesticides. Organic farming principles also encompass high animal welfare standards and the improvement of the environmental infrastructure of the farm.

Legal obligations

Any farmer wishing to produce food for sale as organic must comply with EU Regulation 2092/91, which became operational in January 1993. This regulation in effect defines organic farming. It sets out the minimum standards of production and stipulates that organic farmers must be registered with a certification scheme which itself must be approved by the National Certifying Authority. In the UK, this Authority is the UK Register of Organic Food Standards (UKROFS). The three main approved organic certification schemes operating in Scotland are: the Biodynamic Agricultural Association (BDAA), Scottish Organic Producers Association (SOPA), and the Soil Association (SA).

These certification schemes operate as follows:

- The farmer makes an initial application, (which must describe the cropping history of each field, a conversion plan for the farm, and a livestock management plan for each livestock enterprise) and pays an application fee.
- A visit from an Inspector is carried out and subsequent approval (or not) by a Certification Committee is granted.
- Detailed records of inputs must be kept and each year the farmer has to submit an annual return describing crop and livestock inputs and sales.
- Inspections are carried out annually and a licence is granted for a further year. This on-going certification procedure is funded by an annual payment from the producer.

Organic Standards

The standards of each approved certification body are set out in detailed standards documents, which farmers should obtain and study carefully before making decisions about converting. SOPA has adopted the UKROFS standards verbatim, whereas the Soil Association standards are more detailed in some areas. The standards set by the BDAA are rather more wide-ranging and involve conceptual and philosophical connotations. The main features of UKROFS standards are as follows:

- It is not necessary to convert the whole of a holding, although the unit to be converted must be large enough to impose a valid crop rotation.
- It is not necessary to convert the whole unit at once. A field by field conversion is possible (and may even be desirable).

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- A two year period of **monitored conversion** is required between the last application of a prohibited material (e.g. soluble fertiliser or pesticide) and the sowing of the first full organic crop.
- The crop rotation must have a balance between fertility building crops (e.g. grass/clover ley) and exploitative crops (e.g. cereals, potatoes). For example:

Ley →	Ley →	Ley →	Cereal →	Roots →	Cereal →

- Permanent grassland is permitted.
- Regular inputs of organic matter (e.g. farmyard manure - FYM) must be made.
- Fertilisers such as lime and rock phosphate, which are slowly soluble in the soil, are permitted but soluble mineral fertilisers are prohibited.
- Most manufactured agrochemicals are prohibited but some natural biocides are permitted.

- Livestock and land can be converted simultaneously provided a livestock management plan is approved at the start of conversion.
- Where there are both organic and conventional units on the same holding, it is prohibited to have the same livestock species on both units.
- There is to be no grazing of non-organic livestock on organic land, except for a limited period only (120 days per farm per year).
- Ruminant livestock must be fed a diet which is at least 60% forage on a dry matter (DM) basis.
- For ruminants, at least 60% of the annual DM feed intake must be produced on the unit itself.
- Livestock diets must be based principally on organically produced feedstuffs but a small proportion can be of conventional origin (maximum 10% of dry matter annually and 25% on a daily basis). By the end of 2005 non-organic feed will not be allowed in organic livestock diets.
- Feeds derived from genetically modified organisms, fishmeal, urea and solvent-extracted feeds, are prohibited.
- Housed animals must be provided with bedding. A maximum of 50% of the floor area may be slatted.
- Livestock health policy must be based on preventative management strategies; no routine treatment of healthy animals with drugs, except in the case of a known farm problem. However, treatment of sick animals with veterinary drugs **is** permitted, although withdrawal periods are extended and, in the case of organophosphorus treated animals, organic status is lost.
- No more than 2 courses of therapeutic treatment per year per animal is allowed (except vaccines and anthelmintics).

Applying organic standards in practice

Crop nutrient supply

Organic farming practices aim to minimise loss of nutrients from the system, maximise the efficiency of nutrient recycling within the farm (e.g. avoidance of losses from manure heaps, optimising mineralisation of soil organic N), and maximising the fixation of atmospheric N by legumes such as clovers, peas or beans. Basic soil fertility inputs (lime and rock phosphate) are permitted within the standards.

The foundation stone for most successful organic farms is the grass/clover ley. N fixation by clover provides an N fertiliser factory on the farm and, provided a high clover content can be maintained, there should be no reduction in herbage production and livestock output compared with conventional farms receiving 120-180kgN/ha/annum.

Soil fertility is built up under the ley for subsequent exploitation by the following arable crops when the ley is ploughed, through the release of N from soil organic matter by the mineralisation process. Leys require ruminant livestock for their utilisation and ruminants produce FYM, the currency by which nutrients are transferred around the farm to priority crops e.g. silage, roots and vegetables, 2nd and 3rd year cereals after ley.

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Whilst stockless organic rotations based on green manures are being developed, at present the most reliable organic cropping systems are those with a ley/arable rotation in which at least 50% of the rotation is made up of ley, and with a housed cattle enterprise (to provide FYM). This has obvious financial implications in terms of whole-farm investment and profitability.

Organic farmers are now able to utilise their set-aside land for grazing or cutting provided it has been sown with a legume fodder crop (which can be a grass/clover ley), the grazing and cutting is used by the farmer's own livestock and the whole IACS business is organic. For more information contact the local SEERAD office.

Crop protection

Weed control strategies in organic arable crops should be based firstly on techniques which enhance the competitiveness of the crop, such as:

- Species and varieties which have a rapid ground covering ability
- High seed rates
- Narrow row spacing
- East-west sowing to restrict light reception at ground level

- Undersowing of cereals
- Chitting of potatoes to encourage rapid early growth.

A wide range of equipment is available for post-sowing mechanical weed control if necessary e.g. cereal comb harrow, inter-row cultivator, rolling cultivator, brush weeder, thermal weed control.

Disease and pest control strategies should also be based on prevention. Within the constraints imposed by market demand, crop variety should be chosen on the basis of disease resistance, e.g. for foliar and tuber blight resistance in potatoes. Some permitted biocides give reasonably effective control of foliar disease, e.g. sulphur on cereal mildew and copper oxychloride on potato blight – you should check with your certification body for the levels that can be applied. Insect pest populations should be minimised by encouraging natural pest predators, e.g. by the provision of appropriate vegetation in field margins and in-field strips to provide cover for ladybirds, ground beetles; by intercropping techniques such as undersowing cereals, etc.

Livestock husbandry

Organic livestock health and performance can be optimised by careful attention to the basic principles of livestock husbandry, such as, selection of appropriate breeds, appropriate management practices and nutrition, and avoidance of overstocking. Young-stock should receive an adequate supply of colostrum at birth and should remain with their mothers for as long as possible thereafter. Stress should be minimised at all times. Dietary policy should be aimed at minimising metabolic and physiological disorders, hence the

requirement for ruminants to have at least 60% forage in their diet. Grazing management should be designed to minimise pasture contamination with parasite larvae. Housing conditions should be such that disease risk is minimised i.e. ventilation should be adequate, stocking rate should not be excessive, adequate dry bedding should be available, etc.

Potential yields

As indicated above, if grassland received less than about 200kgN/ha/annum before conversion, output from grassland after conversion to organic need not be any less, provided clover content is high. Stocking rates of over 2 Livestock Units (LU) per forage hectare have been achieved at the SAC Craibstone organic beef unit. Organic grassland on lowground arable soil should certainly support 1.6 LU/ha/annum. First-cut silage yields of 5-6 tonnes DM/ha are also possible. However, the

adoption of management practices to favour clover content is essential if these levels of output are to be achieved.

Organic arable crop yields will inevitably be lower than conventional crops. However, reasonable yields are possible with appropriate management. Factors affecting yield include:

- Stage in rotation (first year arable crops after ley will have minimal reduction in yield)
- Application of FYM (apply to later arable crops in rotation, and in late winter to minimise loss of nutrients)
- Ploughing date (after December, to minimise N leaching loss)
- Avoidance of soil compaction (to optimise soil N mineralisation)
- Choice of crops (spring cereals are better adapted to organic production than winter cereals).

Yields will vary with soil type and climate. A high soil organic matter content (i.e. 8-12%) and southern aspect will boost N mineralisation potential, particularly in spring.

Typical yields are as follows:

	t/hectare
Spring cereals (average)	4
Spring cereals (lea crop)	5
Ware potatoes (marketable)	24

Management during conversion

The land must be managed organically during the conversion period. It should be cropped with a fertility building crop such as a grass/clover ley during this period. This is **essential** if the field has a previous history of arable cropping and a low soil N status. The grass/clover ley can be used during this period either for livestock production or as set-aside. Soil fertility will be built up during the ley and so yield reductions in the subsequent arable phase of the rotation will be minimised. If arable crops are grown during the conversion period they qualify as 'in-conversion' status only if they are **harvested** at least 12 months after starting conversion. In order for a crop grown in the third year after starting conversion to qualify for full organic status, the land must complete its 24-month conversion period **before sowing or planting** the crop.

Financial implications of conversion

A reliable organic farming system is a mixed ley/arable system with a housed cattle enterprise, and so conversion to organic production will be easiest for existing mixed or grassland farms. These will already have the infrastructure (fences, accommodation, etc) and the stock required. All-arable farms, on the other hand, are much less well suited to conversion. In addition to the capital investment required in livestock and infrastructure, a new cropping system will have to be adopted,

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involving an increased proportion of grassland. For these farms, conversion to organic production is likely to involve a considerable reduction in net worth during the conversion period and the early years of full organic production.

Price premiums

Whilst not always obtainable on all products on a regular basis, price premiums have been relatively reliable for milling oats and wheat, for potatoes and other vegetables, such as swedes and carrots, which are easy to grow in Scotland. Prices of between £150-200/tonne for cereals have been obtainable for a number of years. The price of organic potatoes during 2001 was around £200-250/tonne compared with £85/tonne for conventional potatoes.

The market for organic food is small and there is bound to be concern amongst producers about market saturation. However, the organic market is growing, with an increase of 33% seen during 2000-2001. During this period organic food sales reached £802 million. In fact, it is estimated that 70% of these retail sales were made up of imports. A typical gross margin for spring oats is as follows:

Outputs	**£/hectare**
4 t/ha grain @ £170/t	680
1 t/ha straw @ £35/t	35
Arable Area Payment	225
Total	**940**
Variable costs	
Seed:250kg/ha@£495/t	109
Share of lime, phosphate	25
Others	10
Total	**144**
Gross margin	**796**

SEERAD Organic Aid Scheme

The Organic Aid Scheme is aimed at encouraging more farmers to convert to organic farming. Payments are made to farmers on an area basis as follows:

Year	**AAPS eligible land** *(£/ha)*	**Improved grassland** *(£/ha)*	**Rough grazing** *(£/ha)*
1	150	120	10
2	150	120	10
3	50	50	7
4	50	50	5
5	40	30	5

Payments are made on a maximum of 300 hectares of AAPS land and/or improved grassland, but a 1000ha ceiling applies for an application involving rough grazing. To be eligible for payments, producers must be registered with an approved organic sector body and have a conversion plan which has been approved by the certification body. All land that is converted must remain organic for as long as payments are being made. Further details of the Scheme can be obtained from your local SEERAD Office.

Addresses of Organic Certification Bodies

Bio-dynamic Agricultural Association (BDAA)
Demeter Standards Office
17 Inverleith Place
Edinburgh EH3 5QF
Tel: 0131 624 3921
BDAA enquiries Tel: 01453 759501
Fax: 0131 476 2996
Email: fionamackie@ic24.net

Scottish Organic Producers Association (SOPA)
Scottish Organic Centre
10th Avenue
Royal Highland Centre
Ingliston
Edinburgh EH28 8NF
Tel: 0131 335 3306
Fax: 0131 335 6607
Email: contact@sopa.demon.co.uk

Soil Association (SA)
Bristol House
40-56 Victoria Street
Bristol BS1 6BY
Tel: 0117 929 0661
Fax: 0117 925 2504
Email: info@soilassociation.org

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Further information on organic farming

Further free information and advice by telephone can be obtained from the SAC Organic Helpline (01224 711072), from your local SAC Advisory Office, or from the SAC Organic Farming Website:

www.sac.ac.uk/organic-farming

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