

Rural Economy
& Development
Programme



Teagasc Organic Farm Walk

On the farm of

Mark Gillanders

Ballinagall, Monaghan, Co. Monaghan

Wednesday 25th March 2015





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Introduction

Farming Background

Mark, along with his wife Tanya and their three children, Lana (6), Clara (4) and Martha (1) live on their 32 hectare family farm in Ballinagall, 3km from Monaghan Town. He has been farming since taking over from his father in 2004. At that time Mark changed from a dairy system to bull beef and is farming organically since the farm entered organic conversion in 2009, with full organic status for the land and produce being achieved in 2011. Mark is certified with Organic Trust.

Farmed Area

The total area being farmed is 32 hectares as outlined in Figure 1. This is divided into 27 hectares in one parcel around the farmyard, and 5 hectares in one block, 2 miles away from the home farm. All land is currently leased.

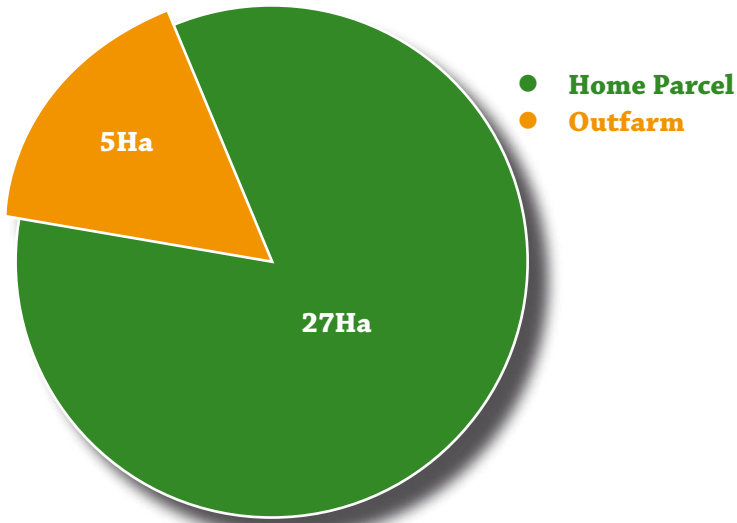


Figure 1 – Mark Gillanders Land Farmed 2015

Mark's Conversion to Organic Farming

Mark began looking at organic farming as an option in 2008. The high costs of concentrates and fertilisers in his high input bull beef system had become prohibitive, and after attending local farm demonstrations and walks Mark realised that organic farming may be a more profitable system. After careful consideration and attending a Teagasc 'Introduction to Organic Production' course he decided to take the organic option. Mark continues to develop his organic farming system, improving on the aspects that have worked on his farm, and making changes where necessary.

Farming Enterprises – Conversion to Organic

There have been significant changes made to the farming system since 2009, and Mark continues to make adjustments.

Prior to entering organic conversion in 2009, Mark had a bull beef enterprise, carrying 10 suckler cows and finishing 20-30 bulls annually. This system required high inputs, including €9000/year on ration. Mark had also invested in a slatted shed and silage pit in 2008.

Since 2009 Mark's suckler cow herd has been built up to 26 cows. The suckler herd are a continental cross, predominantly Limousin X Charolais. The cows are crossed with Mark's own stock Charolais bull 'Fieldview Giuvani,' a locally bred 5 star terminal bull purchased in 2012. The herd are predominantly Spring calving.

The stocking rate for the farm in 2014 was 1.5 LU/Ha.

Since achieving organic status in 2011 Mark initially sold progeny as yearlings, and has identified 2012 as a particularly good year for that type of enterprise. The calves from 2013 have been kept on and are due to be sold as finishers in early April, at an average of two years old. These finishers were weighed in January after the forage rape, and have been given 1-2kg of wheat/day, as well as the high quality red clover silage.

Mark has been sowing tillage since entering conversion. This has supplied ample straw and, along with the red clover silage, feed for overwintering.

Land Use and Management on Organic Farms

Breakdown of Land Use

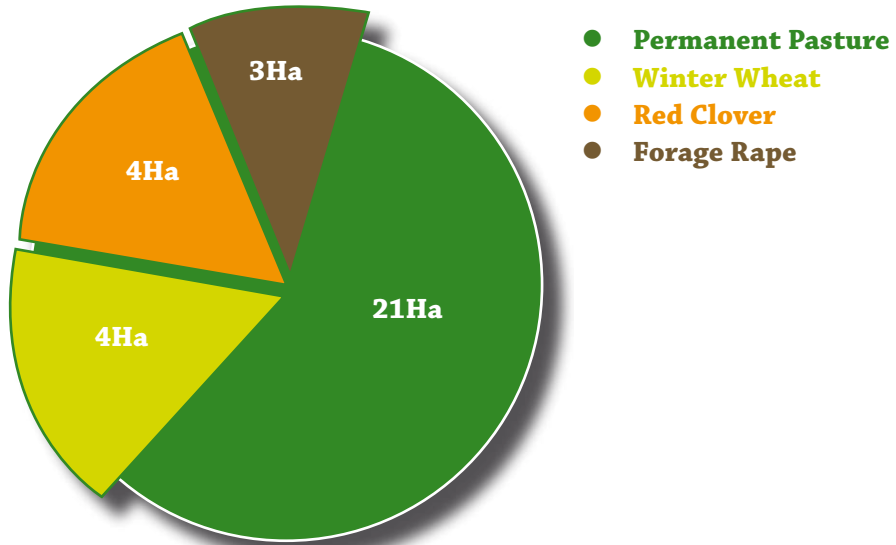


Figure 2 – Mark Gillanders Land Use 2015

Mark has implemented a rotation, which entails growing 4 hectares of winter wheat for 2 years, then reseeding with grass and white clover ley. The intention is to keep this grass/clover ley as permanent pasture for ten years, before rotating again. This rotation allows a total of 21 hectares to be kept in permanent pasture, as the main grazing platform for the cattle.

In mid-October 2014, 4 hectares of winter wheat were sown. The variety used was JB Diego, known for its moderate resistance to lodging and good resistance to straw breakdown. Yields in 2014 were 6.25 tonnes/hectare, and 250 square bales of straw/hectare.

On 20th July 2014, 2.5 hectares of forage rape were sown. The variety used


was Swift, at 7.5kg/Ha. Swift is a Rape/Kale cross, giving it extra vigour and winter hardiness. The forage rape was grazed from 20th October for three months by 20 yearlings. This plot will be incorporated into the rotation by growing a combi-crop of peas and barley, followed by winter wheat for two years, and then it will be put back into grass/clover permanent pasture.

A red clover ley of 3 hectares was sown after winter wheat in 2013, using 9kg Hymer Hybrid Ryegrass and 4kg Merviot red clover. Merviot is known to have good yield and Sclerotinia resistance. Three cuts of silage were taken, on 15th May, 6th July and again in mid-August, after which it was lightly grazed. Another option would have been to take a fourth cut of silage in late September.

Grassland Management

Mark grazes cattle on a rotational basis around the farm using a paddock system. Cattle graze on both old pastures and recently re-seeded permanent





clover pastures/herbal leys. This year cattle also grazed the 3rd cut aftermath of the red clover ley. Topping is carried out as necessary to improve grassland performance and to control weeds.

The Value of Clover

For many Irish farms the simplest and most financially rewarding system of production will be based on maximizing the use of grazed grass. With good grassland management it is possible to have a long grazing season of high quality feed at low cost. On an organic farm, clover is the driver of grassland production.

Farming circumstances are changing rapidly and clover-based pastures can now maintain stocking rates suitable for 80% of Irish farms. With this in mind farmers are now looking at organic farming with renewed interest. On farms where the stocking rates are in the range 1.2 to 1.7 LU/Ha and there is little or no clover present, making the switch to organics will require clover to be incorporated into the grassland.

Red Clover on Mark's Farm

Red clover silage swards can meet the forage requirements of an organic farm whilst improving the protein content and overall feeding value of the winter forage. Red clover is better suited to silage production than white clover because of its much more erect growth habit and its significantly higher forage yields.

Benefits of Red Clover

- Can fix ~200kg N/Ha/year
- High yielding 13 – 15 tonnes DM/Ha
- Winter hardy and relatively drought tolerant due to deep rooting
- Principally used for silage cutting and fertility building
- High Protein (15-18%)

- Greater palatability and intakes versus grass silage resulting in increased animal performance
- Suitable as a break crop for tillage/horticulture to improve soil structure and fertility, and as a supplier of organic matter
- High nutrient off-takes from crop so need to monitor P and K levels carefully. Performs best on well-drained, fertile soils with a pH of 6-6.5. Minimum Index 2 required for P and K

Red Clover Silage Conservation

- Cut three times per year, and given 'light' graze at end of year
- Cut before red flower develops
- Important to wilt (24 - 48 hours) after cutting due to high nitrogen content
- Can last 5 years +

Grass Silage Production

Mark takes a first cut of pit silage from the 4Ha of red clover-hybrid ryegrass ley, and from 2Ha of permanent pasture. In 2014 this produced 260-270 tonnes of pit silage. A second and third cut of the red clover ley produces 120 round bales of high quality silage on average each year.

Table 1 presents sample analysis and feed value of red clover.

Table 1 – Sample Red Clover Silage Analysis Reports on Organic Farms

Results	Sample Result 1	Sample Result 2	Sample Result 3	Sample Result 4	Range
Dry Matter %	23.6	41.50	46	27.1	15 to 55
pH	4.5	4.90	4.9	4.2	3.5 to 5
Ammonia %	14.0	8.0	13.0	8.7	7 to 15
Protein % DM	18.1	15.80	15.3	10.8	7 to 16
ME (MJ/kg DM)	11.2	11.50	10.3	10.6	9 to 12
DMD (%DM)	74	78	69	68	55 to 77

White Clover

Mark has over-sown all of the permanent pasture with white clover since entering the organic conversion phase, and has incorporated complete reseedling into his planned rotation. He has seen the benefits of growing white clover such as:

- Extends grazing season ~ 1 month
- Higher stocking rates
- Provides free Nitrogen (in the region of 100kg N/Ha/year)
- Higher intakes by animals
- Higher mineral content
- Maintains digestibility all season
- Greater biological diversity in sward



Establishing White Clover in Swards - General Guidelines

Seeding Rate

White Clover 4kg/Ha to 5kg/Ha (Use only organically certified seed – must seek derogation for conventional untreated seed from Organic Certification Bodies)

Timing of Sowing

Spring to mid-August (*Clover seed must be sown not deeper than 1 cm, ensure good seed soil contact and avoid late autumn sowing*).

Recommended Management Practices for White Clover Swards

1. Clean off pastures in Autumn to allow light penetration to the clover stolons
2. Spring graze until late April frequently and tightly
3. Lengthen rotation to 28 days in mid-Summer
4. Alternate cutting and silage fields
5. Soil test for and maintain lime status
6. Apply slurry in Spring to overcome slow Spring growth
7. Avoid poaching



Organic Cereals

Growing organic cereals is an excellent way to improve profitability of the livestock enterprise, by supplying high quality feed and bedding at a more affordable cost. Mark has built up the amount of wheat grown since 2009 to 4 hectares, using the wheat variety JB Diego - sown in Mid October 2013.

A derogation must be granted from the Organic Certification Body to sow undressed conventional seed. The cost of growing winter wheat has been approximately €70/tonne. In 2014, 14 tonnes of excess wheat was rolled and sold direct to farmers at €330/tonne.

Table 2 - Estimated Gross Margin for an Organic Wheat Crop

Winter Wheat	
Description	Production level
Yield Output (excl. straw)	5 tonnes/Ha €1400/Ha
Material Inputs € Seed (192.5kg per Ha)	*€112.50/Ha
Machinery Hire	
Plough Till and Sow	€150/Ha
Harvest	€100/Ha
Baling	€35/Ha
Transport	€25/Ha
Gross Margin per acre (excl SFP)	€977.50/Ha

* Non dressed conventional seed. Certified organic cereal seed cost €50/acre ex stockists



Forage Crop Mixtures for Winter Grazing

Mark has sown 'Swift,' a rape/kale forage crop, at 7.5kg/Ha for Winter grazing of his finishers. A typical yield for forage rape is 5 tonnes DM/ hectare, with 19-20% crude protein. A typical dry matter yield for stubble turnips would be 2.5-7.0 tonnes/hectare, with crude protein at 20-24%.

Advantages of Winter Forage Crops

- Produces palatable thick crop
- High protein crop
- Quick growing 14-15 weeks for rape and 12 to 13 weeks for turnips after sowing
- Sow mid-June to mid-August
- Feed October to February

Soil Nutrients and Manure Management

The aim of organic farming is to maintain soil fertility levels by efficient recycling of farmyard manure, slurry and/or compost that is normally generated on the farm. The efficient storage and spreading of farmyard manure, slurry or compost is vital to organic farming. Management of organic farms should ensure regular inputs of manures and a level of microbial and earthworm activity sufficient to breakdown organic matter and ensure continuous and efficient nutrient cycling. Keeping soils at a pH that facilitates organic matter breakdown and nutrient recycling is essential for successful organic farming.

Soil Analysis

Mark's farm is on a gley/acid brown earth type soil (Soil Type 25), which can be sticky and hard to work, owing to the gley component, but also has reasonable natural fertility. Mark's nutrient management decisions are based on his soil samples. Soil analysis from the farm has shown overall good levels of both P and K in the soil. This indicates that production levels



have not been hindered by converting to organic farming. Most of the fields have a recommendation of lime, which will be applied going forward.

Organic manure nutrient content can vary widely depending on the source of nutrients and it is advisable to have the nutrient content of manures checked through laboratory analysis. Table 3 below gives a guideline to both the nutrient content and value of organic manures based on the value of chemical fertilisers.

Table 3: Available Nutrient Content & Guide Value (€) of Organic Manures 2015

Organic Fertiliser Type	N kg/m ³ P kg/m ³ ⁵ (units/1,000 gal)		K kg/m ³ (units/1,000 gal)	Value €/m ³ (units/1,000 gal)	Or (€/1,000gal) ^{3,4}
Liquid manures	N ¹ (S1 31, 2014)	N ² (Actual)			
Cattle (7% DM)	2.0 (18)	0.7 (6.5)	0.6 (5)	3.3 (30)	5.2 (24)
Soiled Water	0.48 (4) Nkg/t		0.08 (7) Pkg/t	0.6 (5) Kkg/t	1.2 (5.5) Value €/t
Solid Manures	1.4 (2.8) Dungstead Manure		0.9 (1.8) Farm Yard Manure	4.2 (8.4)	7
	1.35 (2.7)		1.2 (2.4)	6.0 (12.0)	10
Poultry	6.5 (11) Broiler/deep litter		6.0 (12)	12.0 (24)	30
	8.8 (13.7) Layers (30% D.M.)		2.9 (5.8)	6.0 (12)	10
	11.6 (2) Layers (55% D.M.)		5.5 (11)	12.0 (24)	36
	14 (28) Turkeys		13.8 (27.6)	12.0 (24)	54

1 Nitrogen availability based on Nitrates Directive S1 31, 2014 (Cattle slurry total N of 5.0kg/m³) kg by 2 = units

Spring application of organic manures is required to maximize N recovery. Manures should be tested to determine manure nutrient content.

2 The realistic value of N in Cattle slurry is approx. 7-8 units/1,000 gallon (based on total N of 3.6kgN/m³ @ 20% N availability).

3 Value of N = €1.00/kg, P = €2.00/kg, K = €1.00/kg (Nutrient values based on price / volume of range of fertiliser products).

4 Cost of spreading and transport not included.

5 Reduce P availability to 50% on P index 1 & 2 soils.

Sources of Nutrients on Mark's Farm

- Nitrogen from atmospheric fixation by red clover, white clover and other legumes
- Slurry from over-wintering of animals indoors
- FYM from the over-wintering animals – cows calving
- Imported organic poultry manure (sourced locally in Co. Monaghan)
- Other fertilisers where required eg. organic approved slag fertilisers
- Lime

Almost all the cattle slurry produced during the winter period is spread on the red clover ley between silage cuts. Some slurry is also spread on permanent pasture paddocks cut on occasion for silage.

Farmyard manure (FYM) from cow calving sheds is spread on ground for re-seeding. Organic layers chicken manure from a local farmer is also spread mainly on newly re-seeded ground and/or winter forage crops prior to sowing. On occasion, other nutrients in the form of slag fertilisers and lime are spread according to soil sample analysis results.

Mark's use of rotations involving the movement of red clover, wheat, winter forage crops and permanent pasture around the farm helps to ensure that nutrients are spread around quite evenly around most of the farm over time.





Keys to Financial Performance in Organic Farming

Markets

Mark is very conscious of the market place and the demand for finished organic beef animals and therefore aims to supply the organic market during the early Spring period when organic beef prices are generally at their highest. The market price for organic beef has generally been 15-20% ahead of conventional prices in recent years.

Productivity

Mark has achieved relatively high productivity levels compared to other farmers by aiming for a fast turnover of quality relatively young finished stock. He has implemented a number of innovations on his farm to keep production levels high, including:

- Reseeding with grass mixtures containing high amounts of clover.
- Grass/white clover mixes for grazing. White clover can fix between 100-150kg N/Ha/year.
- Red clover/Italian ryegrass ley for high yielding, high protein silage in 2011 (1Ha), as well as a red clover/Hybrid ryegrass ley in 2013 (3Ha).
- Forage rape provides a bulky, high protein feed for finishing cattle, as Mark himself says, “they don’t go backward after forage rape.”
- Winter wheat has been grown as part of the rotation, to provide extra quality fodder for finishing cattle, as well as straw for bedding.
- Organic matter and nutrient levels have been bolstered by importing fertiliser onto the farm in the form of layers hen manure from free range and organic layers units (average 22 tonnes per year, depending on Nitrates rules at a cost of €4.50/tonne including delivery), and lime.

Costs

Costs have been kept low by having no artificial fertiliser bill. Phosphorous (P) and Potassium (K) levels have been maintained since organic conversion mainly by the financially resourceful use of imported hen manure from

organic and/or free-range farms. While the higher price for organic rations has been identified as a barrier for some farmers entering organic production, Mark has turned this into a positive by growing winter wheat as feed. Mark's feed costs are further reduced through the use of quality on-farm sources of feed such as high clover grazed swards, red clover silage and winter forage crops. Mark's main costs relate to re-seeding costs to produce these crops.

Animal Welfare on Organic Farms

Animal Housing

In organic farming housing is not compulsory, but where provided, cattle must be allowed more floor space than on most conventional farms. At least 50% of the floor area must be solid and bedded i.e., not slatted. Straw, rushes or untreated wood shavings are acceptable bedding materials and these need not be organic. All animal housing is subject to inspection and approval by the Organic Certification Body, and adjustments may be necessary. For many farmers a combination of a bedded lying area and a slatted feeding area may offer the best solution (see Table 4). Cubicles are permitted but must have dry bedded material on top. Cows require 3m² cubicle plus a lounging area.

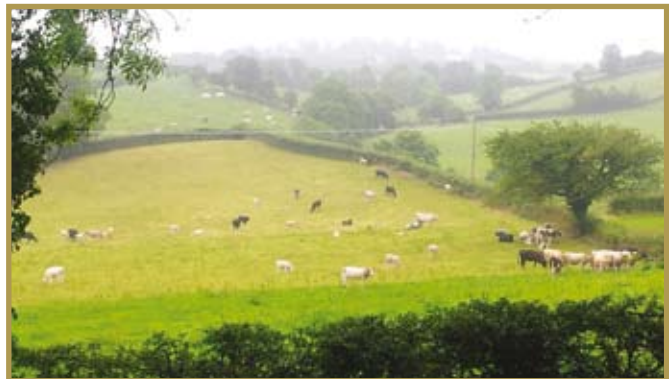


Table 4: Minimum housing area per head and by weight – Organic Standards

Animal	Minimum Indoor Areas <i>(net area available to each animal)</i>	m²/head
	Live-weight Minimum (kg)	
Calves;	Up to 100kg	1.5
Beef Cattle;	Up to 200kg	2.5
Bull Beef;	Up to 350kg	4.0
	Up to 500kg	5.0
Suckler Cows	Up to 600kg	6.0
Dairy Cows	Over 600kg	6.0 min.
		1m ² /100kg
Breeding Bulls		10m ²

**Note: 50% of the areas listed above must be bedded lying area.*

Livestock Health

A healthy herd in organic farming is achieved by a combination of good management, sound nutrition and good animal husbandry skills. When a farm undergoes conversion to organic status an Animal Health Plan is required to be drawn up by the veterinary practitioner, who specifies the current animal health issues on the farm and how the farmer will tackle these problems into the future, while conforming to the requirements of organic certification standards. Detection of problems needs to be early, and timely veterinary advice is invaluable – when an animal is ill the organic farmer reacts in the same manner as their conventional neighbour and veterinary assistance is required immediately.

Conventional Veterinary Treatments Permitted

- Animals for meat consumption: 1 course antibiotics within 12 months
- Animals for breeding: 2 courses antibiotics within 12 months
- Dairy Mastitis: 2 courses antibiotics within 12 months
- If limits exceeded, organic status taken away from animal

Withdrawal Periods for use of Veterinary Products

- Under 18 days triple the withdrawal time
- Between 18-28 days adhere to a 56 day withdrawal period
- Min 7 days adhered to if no period specified
- If treated with organophosphates, lose organic status permanently.



Organic Certification in Ireland



A major factor that distinguishes organic farming from other approaches to sustainable farming is the existence of internationally acknowledged standards and certification procedures. The standards for organic production within the European Union are defined and enshrined in law by Council Regulation EC 834/2007 as amended.

In Ireland the Department of Agriculture, Food and the Marine is the competent authority (i.e. the Department's Organic Unit is based at Johnstown Castle Estate, Wexford) for regulating the organic sector and ensuring that the obligations and requirements of Council Regulation (EC) No 834/2007 as amended are adhered to.

The Organic Unit of the Department of Agriculture, Food and the Marine have designated official Organic Certification Bodies whose role is to certify organic producers, farmers and processors through an inspection process of each individuals unit or farm.

Further information can be sourced from these certification bodies.

Organic Certification Bodies

IOFGA (Irish Organic Farmers and Growers Association)

16A Inish Carraig, Golden Island, Athlone

Tel: 090 6433680

Website: www.iofga.org

Organic Trust, 2 Vernon Avenue, Clontarf, Dublin 3

Tel: 01 8530271

Website: www.organictrust.ie

The Organic Conversion Process

- A conversion plan is required for the two-year conversion period. This is submitted to your chosen Organic Certification Body (see contact details above).
- The role of the Organic Certification Body is to regulate the organic production system through an inspection process carried out at farm and processing level.
- All entrants to organics may also be eligible to enter the Organic Farming Scheme due to re-open in early 2015.
- To be eligible for the Organic Farming Scheme an application has to be submitted to the Organic Unit of the DAFM which is based in Johnstown Castle, Wexford.
- A 25 hour 'Introduction to Organic Production' course has to be completed by new organic applicants before acceptance into the Organic Farming Scheme.



Proposed Organic Farming Scheme to Open 2015

The objective of the Organic Farming Scheme is to deliver enhanced environmental and animal welfare benefits and to encourage producers to respond to the market demand for organically produced food.

The main elements of the Scheme which is awaiting European Commission approval are as follows:

- The scheme will be delivered as a stand-alone scheme.
- The standard rate of payment is €220/Ha for conversion with maintenance rate of €170/Ha, with higher rates of €300 (conversion) and €200 (maintenance) applying for Horticulture operations, and €260 (conversion) and €170 (maintenance) for Tillage operations. In addition, a top-up of €30/Ha for red clover is included. The higher horticultural rates will apply to the first six hectares only; thereafter the standard rate applies. For tillage farmers, the higher rate ceiling is 20Ha.
- An organic capital investment scheme has been included in the new TAMS II. A general grant aid rate of 40% will apply, with 60% available for young farmers.

Consult DAFM (www.agriculture.gov.ie) for further details and updates.



Information on Organic Farming

Website: www.teagasc.ie/organics for information

Teagasc Organic Specialists

Dan Clavin, Teagasc, Mellows Centre, Athenry, Co Galway

Email: dan.clavin@teagasc.ie

Mobile: 087-9368506

Elaine Leavy, Teagasc, Grange, Dunsany, Co. Meath

Email: elaine.leavy@teagasc.ie

Mobile: 087-9853285

Department of Agriculture, Food and the Marine

Dept of Agriculture, Food and the Marine, Organic Unit,

Johnstown Castle Est, Wexford

Tel: 053-9163400

Email: organicunit@agriculture.gov.ie;

Website: www.agriculture.gov.ie

Additional Organic Certification Bodies

Institute of Marketecology (IMO), 4 Lough Owel Village, Tullaghan,

Mullingar, Co Westmeath

Mob: (087) 2517291

Email: angelika.brady@imo-control.org

Website: www.imo.ch

Global Trust Certificate Ltd, 3rd Floor, Block 3, Quayside Business Park,
Mill Street, Dundalk, Co. Louth

Phone No. (042) 9320912 Fax No. (042) 9386864

Email: info@gtcert.com

Website: www.gtcert.com

BDA Certification - Organic and Demeter, The Painswick Inn Project,
Gloucester, Gloucestershire, GLS 1QG, United Kingdom

Phone No: 00 44 1453 766296 Fax No: 00 44 1453 759501

Email: certification@biodynamic.org.uk

Website: www.biodynamic.org.uk

