Financial Performance of Organic Cattle Farming

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Introduction

Production of organic food continues to grow on a world-wide basis, as consumer awareness and demand for organic food increases. Food scares allied to environmental issues, animal welfare considerations and greater health awareness have given rise to greater consumer demand for products that are produced in a natural environment.

Currently within the EU-25, 4.7 per-cent of land farmed is managed organically. Figures compiled by FiBL Switzerland show that strongest growth recently has been in the new member states and in particular France. There are five countries in Europe with greater than 10 per-cent agriculture area under organic management - Liechtenstein (26.9 per-cent), Austria (18.5 per-cent), Sweden (12.6 per-cent), Switzerland (10.8 per-cent), and Estonia (10.5 per-cent). The six countries with the largest organic areas are Spain, Italy, Germany, UK, France and Austria (ref: http://www.organic-europe.net).

In Ireland, the organic market has been relatively slow to develop with a limited uptake in organic production by farmers. Latest figures (August 2011) show that there are 1,459 registered producers in Ireland farming 52,390 ha which represents 1.2 per-cent of utilizable agricultural area (UAA). The growth of organic farming in Ireland over the last decade is shown in Table 1 and Figure 1 (source: DAMF, pers. comm., August 2011).

Table 1 Irish organic farm numbers and area farmed 1995-December 2010.

Year	Farms*	Organic Area UAA (ha)*
1995	300	6,400
2000	852	27,230
2001	918	30,020
2002	923	29,850
2003	889	28,510
2004	897	30,670
2005	978	35,260
2006	1,104	39,940
2007	1,102	39,240
2008	1,230	44,600
2009	1,315	47,691
2010	1,392	52,380

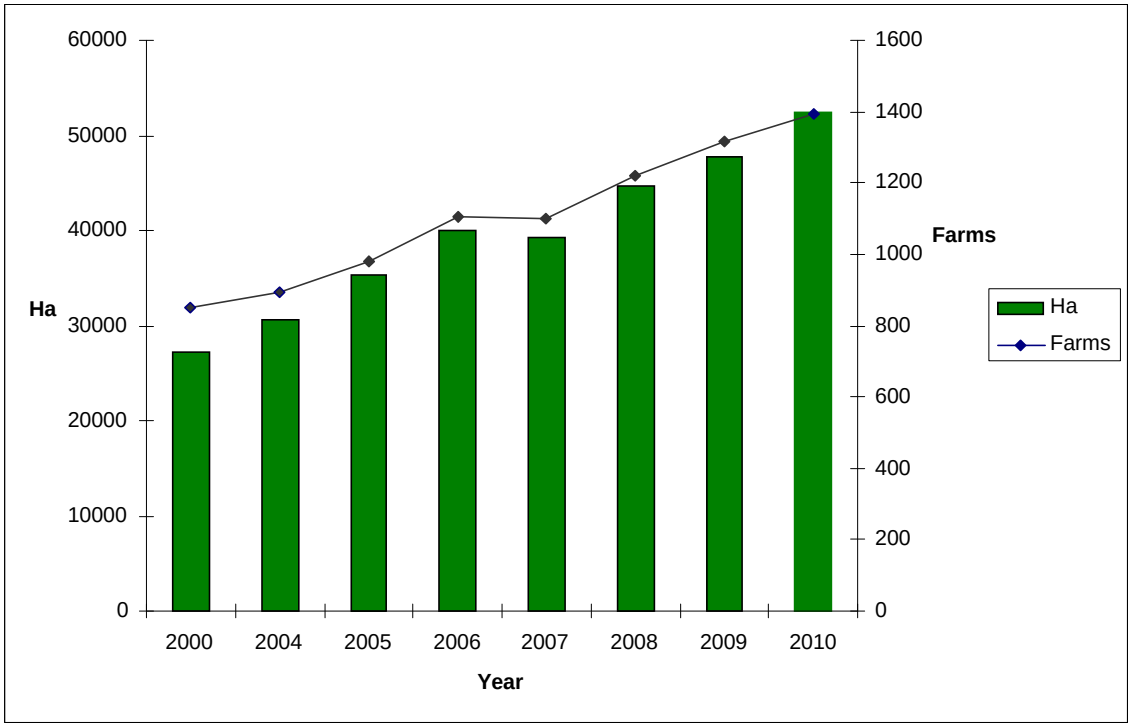

Figure 1 Organic farm numbers and area farmed (UAA) in Ireland, 2000-2010 (adapted from Moran and Connolly, 2007).

Organic production grew rapidly in the 1990's with 918 producers farming approximately 30,000 ha by 2001. Numbers remained relatively static until 2005 when there was further expansion to 1,392 producers farming 52,380 ha by the end of 2010. This represents an average increase from 2007 to 2010 of 8 per-cent in organic farmer numbers and 10 per-cent in UAA year on year.

Organic production in Ireland is located mainly in the west, mid-west and the southwest with over two-thirds of producers located in Connaught and Munster. The proportion of organic producers in the east of the country is significantly lower and as a result the area devoted to organic cereals is much lower than the national average. In the early years of organic production organic farms were considerably smaller in size than conventional. However, over time this has changed and in 2010 the average organic farm size was 38 ha compared to 39.9ha for conventional farms.

Latest DAMF figures (DAMF, personal communication, August 2011) show the majority of Irish organic farms are involved in drystock production i.e. cattle or sheep farming, with 900 farmers involved in cattle production and 350 farmers involved in sheep production. There are 13,000 suckler cows with an average herd size of 39 animals per farm; average flock size is 70 breeding ewes. Ireland is self-sufficient in both organic beef and lamb but markets such as the U.K. and Germany

along with other countries provide export opportunities especially for organic beef. Dairy farming is one of the least represented farming systems involved in organic production due mainly to the lack of organic milk processors and a buoyant conventional sector at present. There are approx. 25 organic dairy farms with an average herd size of approx. 60 cows. There is a small pig and poultry sector supplying a niche market, with 69 pig producers and 160 poultry producers.

Both the cereal and horticulture sectors represent opportunities for growth as much of the organic fruit, vegetable and organic animal feed stuffs used in Ireland are imported. There are 121 cereal producers farming 1,360 ha with 45 growers greater than 10ha in size. Although cereal area accounts for only 2.6 per-cent of total organic UAA, it has more than doubled since 2008 to present largely due to attractive market prices and opportunities for import substitution. There are 300 horticulture producers farming 420 hectares with most farming relatively small areas (only 20 farms are larger than 6ha).

The 2020 Food Harvest report aims at an ambitious target of increasing organic land use from just over 1% at present to 5% (DAFF, 2010). Farmers require financial information on the financial performance of organic production when deciding to convert to organic production or in the case of existing organic farmers, change enterprise. Growth opportunities exist for increasing organic production and in particular organic beef exports to large consumer markets in the UK and Europe. In this paper, the largest organic production sector (organic cattle) is examined to assess how financial performance of organic cattle production compares with conventional cattle production.

Financial and Technical Performance on Organic and Conventional Cattle Farms

The National Farm Survey (NFS) has been conducted by Teagasc since 1972. Data on technical and financial performance is collected on an annual basis from a sample of farms involved in various farming systems as defined by the EU Farm Accountancy Data Network (FADN). A summary of NFS data for all the main farm systems is available for 2010 (Hennessy *et al*, 2011).

Drystock farming, in particular cattle production is the most prevalent system of

production in both the organic and conventional farming sectors in Ireland and in this paper the cattle production system consisting of a combination of the "Cattle Rearing" suckler production system and the "Cattle Other" system is examined.

Due to the small number of organic farms available for sampling it was decided to combine data from the "Cattle Rearing" and "Cattle Other" farming systems in the NFS into a general "Cattle" system for the purposes of comparing organic with conventional. Data from 14 organic cattle farms including 5 "Cattle Rearing" and 9 "Cattle Other" farms was compared with data from 507 conventional cattle farms, including 212 "Cattle Rearing" and 295 "Cattle Other" farms. The organic farms included 7 farms from the current NFS sample and 7 farms participating in the 2010 joint Teagasc/Department of Agriculture, Marine and Food Organic Demonstration Farm Programme. These latter farms will hereto be referred to as "demonstration farms". It should be emphasised that the NFS farms were randomly selected by the Central Statistics Office (CSO), while the demonstration farms were specially selected due to their level of performance and experience and therefore would represent the more efficient sector of organic cattle production. It is also important to note that all data was obtained on a "whole-farm" basis – cattle production is the predominant enterprise on all farms but these farms can also have other minor enterprises e.g. horses, sheep or tillage crops, therefore the data represents cattle and all other enterprises on the farm and it is important that this is taken into consideration when interpreting the data. Adopting this "whole-farm" approach is prudent as organic farming is best approached on a whole farm basis, rather than focusing on individual enterprises. It is similar to the approach adopted in analysing financial performance of organic v's conventional farms in the UK (Lampkin *et al*, 2011).

Table 2 shows land-use on the sample of organic and conventional farms.

Organic farms were 74 per-cent larger (UAA) than conventional farms (55.2ha v's 31.7ha). Grassland was the predominant crop with tillage or root crops accounting for less than 3 per-cent of UAA on both organic and conventional farms. Tillage has increased significantly on both organic and conventional farms since the previous similar analyses carried out in 2005 and 2007 (Moran and Connolly, 2007; Connolly *et al* 2008). 50 per-cent of the organic farms were on very good soils (wide or moderately wide land-use range) compared to 32 per-cent of conventional farms**.**

Table 2 Land-use on organic and conventional cattle farms 2010.

	ORGANIC	CONVENTIONAL
	Ha	**Ha**
Pasture (incl. winter forage)	40.9 (6.5)	27.6 (4.5)
-silage	5.9	4.1
-hay	0.6	0.4
Rough grazing	6.0	2.4
Forage area	**46.9**	**30**
Tillage and root crops	1.4	0.8
Forestry	6.9	0.9
Land farmed (UAA)*	**55.2**	**31.7**
Land owned	51.4	29.8
% of farms on very good soils	50%	32%

Source: National Farm Survey 2010
*UAA = Utilisable Agriculture Area = total pasture+ rough grazing+tillage and root crops +forestry.

Livestock categories and numbers are shown for organic and conventional farms in Table 3.

Table 3 Livestock units on organic and conventional cattle farms 2010.

	ORGANIC (L.U./FARM)	CONVENTIONAL (L.U./FARM)
Cattle	38.2	32.8
of which suckler cows	*19.5*	*13.1*
Sheep	4.2	2.3
Horses	0.4	0.2
Total	**42.7**	**35.4**

Source: National Farm Survey 2010

Organic farms have only 21 per-cent higher cattle numbers (38.2 L.U. v's 32.9 L.U.) than conventional farms despite having 57 per-cent more forage area (46.9ha v's 30ha). Sheep and horse numbers were higher on organic farms, albeit both were at a low level. An increase in sheep numbers on both organic and conventional farms is a major change compared to the last study carried out in 2007 (Connolly *et al* 2008). Combining land farmed in Table 2 with livestock units in Table 4, the stocking rate was 0.91 livestock

units per forage ha on organic farms versus 1.18 livestock units per forage ha on conventional farms (Table 4).

Table 4 Stocking rate on organic and conventional cattle farms 2010.

	ORGANIC	CONVENTIONAL
Stocking rate (L.U./ha)*	0.91	1.18

* Forage area only used to calculate stocking rate.
Source: National farm Survey 2010

Stocking rate is a key difference between organic and conventional cattle farms with organic farms stocked 22 per-cent lower than conventional farms. This is a change compared to the 2005 and 2007 studies which showed organic farms stocked 40 per-cent lower and 47 per-cent lower respectively to that of conventional farms. These stocking rate differences between organic and conventional farms are not as prevalent in England and Wales, where for example in a survey of lowland cattle and sheep farms carried out in 2009/2010, average stocking rates on organic farms were 0.8 L.U./ha compared to 0.9 L.U./ha on conventional farms (Lampkin *et al*, 2011).

Table 5 shows selected financial data for organic and conventional cattle farms.

Gross Output: Gross output is the sum of all farm sales less purchases of livestock, plus all farm direct payments, plus value of farm produce used in the household, plus receipts for hire work, service etc. It also includes change in inventory, which in the case of cows, cattle and sheep is calculated as the change in numbers valued at closing inventory prices. Organic farms had a 54 per-cent higher gross output per farm (€49,313/farm v's €31,953/farm) but an 11 per-cent lower gross output per hectare (€893/ha v's €1008/ha). This is mainly a reflection on the higher stocking rates on conventional cattle farms.

Direct payments: Direct payments include Single Farm Payment, Suckler Cow Welfare Scheme (SCWS), Rural Environmental Protection Scheme (REPS) and other agri-environmental schemes, SM6 organic top-up (Organic REPS), Organic Farming Scheme (OFS), Disdavantage area scheme, Forestry scheme payment, Sheep grassland scheme and other minor schemes. Direct payments on organic farms were significantly higher per farm (€27,255/farm v's €14.939/farm). Payment rates were similar per hectare (€494/ha on organic farms

compared to €471/ha on conventional farms. A breakdown of direct payments will be examined later in the paper.

Table 5 Selected financial data for organic and conventional cattle farms 2010.

	Organic		Conventional	
	€/farm	**€/ha**	**€/farm**	**€/ha**
Gross Output (G.O.)	**49,313**	**893**	**31,953**	**1008**
of which Direct Payments D.P.)	27,255	494	14,939	471
Market Output (G.O. minus D.P.)	22,058	400	17,014	536
Direct costs	**8,996**	**163**	**11,057**	**349**
Gross margin (G.M.)	**40,344**	**731**	**20,896**	**659**
Market Margin *(G.M. minus D.P.)*	13,089	237	5,957	188
Overhead costs	**21,062**	**382**	**12,398**	**391**
Family Farm Income (FFI)	**19,282**	**349**	**8,499**	**268**
Net new investments	5,950	108	3,354	106
Loans (closing balance)	25,143	456	7,962	251
Total Costs % Gross Output	61%		75%	
% DP retained as FFI	71%		57%	

Source: National farm Survey 2010

Market output: Market output is gross output excluding direct payments. Organic farms had a 30 per-cent higher market output per farm (€22,058/farm v's €17,014/farm) but a 25 per-cent lower market output per hectare (€400/ha v's €526/ha). The lower market margin per hectare is mainly a result of higher stocking rates on conventional farms resulting in greater output per hectare.

Direct costs: Direct costs are costs incurred in the production of a particular enterprise e.g. concentrate feed, fertilizers, seeds, hire of machinery, transport, veterinary costs, casual labour, straw bedding, various levies, mart commission, polythene bailer twine

etc. Organic farms recorded significantly less direct costs compared to conventional farms. Direct costs per farm were 18 per-cent lower on organic farms (€8,996/farm v's €11,057/farm) and 53 per-cent lower per hectare (€163/ha v's €349/ha). Direct costs will be discussed in more detail later in the paper.

Gross Margin: Gross Margin is gross output minus direct costs. Gross margin was significantly higher on organic farms. Gross margin was 93 per-cent higher/farm (€40,344/farm v's €20,896/farm) and 11 per-cent higher per hectare (€731/ha v's €659/ha). This is mainly due to the significantly lower direct costs on organic farms.

Market Margin: Market margin is gross margin minus direct payments. Market margin per farm was 120 per-cent higher on organic farms (€13,080/farm v's €5,957/farm) and 26 per-cent higher per hectare (€237/ha v's €188/ha). This is mainly a reflection on the lower direct costs on organic farms.

Overhead costs**:** Overhead costs (sometimes referred to as fixed costs) refer to costs which cannot be directly associated to a specific farm enterprise eg. land lease/rental, car, electricity, phone, current hired labour, machinery (incl. depreciation), buildings (incl. depreciation), land improvement (incl. depreciation), lime etc. Overhead costs per farm were 70 per-cent higher on organic farms (€21,062/farm v's €12,398/farm) but were quite similar on a per hectare level (€382/ha v's €391/ha).

Family Farm Income: Farm Family Income (FFI) is gross output less total net expenses (direct costs and overhead costs). It represents the total return to the family labour, management and capital in the farm business. Family Farm Income (FFI) was €19,282 per farm on organic farms and €8,499 on conventional farms. On a per hectare basis, FFI was 30 per-cent higher on organic farms (€349/ha v's €268/ha).

The results shown in Table 5 are similar and confirm findings in previous studies carried out on the financial performance on organic cattle farms in Ireland which also found that organic cattle farmers achieved higher farm family incomes than conventional farms mainly due to lower production costs (Connolly *et al* 2008, Moran and Connolly 2007; Conway, A., 2002). This is clearly evident in the data in Table 5, where total costs account for 61 per-cent of gross output on organic farms compared to 75 per-cent on conventional farms. Whereas in this study, organic data was sourced

from both NFS and demonstration farms, in the previous two studies (Connolly *et al* 2008; Moran and Connolly, 2007), only demonstration "Cattle rearing" farms were used to compile data for organic farms while conventional data was obtained from NFS "cattle rearing" farms only.

These farm family income differences between organic and conventional farms are broadly similar to those in England and Wales, where for example in a survey of lowland cattle and sheep farms carried out in 2009/2010, average "farm business income" was £255/ha on organic farms v's £225/ha on conventional farms (Lampkin *et al*, 2011). In the England/Wales study, the gap between organic and conventional income was mainly due to lower production costs and higher direct payments on organic farms. In this study, direct payments were not considered as significant a factor contributing to differences between organic and conventional farms.

The gap in stocking rate, market margin and overhead costs between organic and conventional farms has tightened considerably since previous studies carried out in 2005 (Moran and Connolly, 2007) and 2007 (Connolly *et al* 2008). This may be a reflection on the increased technical performance of organic farms, better linkages among organic farmer buyers/sellers, improved access to premium organic beef prices, and the increased levels of net new investment now taking place on many organic farms. In previous studies, overhead costs were significantly lower on organic farms. In this study, organic farms had a higher level of net new investment at €5,950 per farm (€108/ha) compared to €3,354 per farm (€106/ha) on conventional farms, albeit much of the investment on the organic farms occurred on the demonstration farms. Organic farmers can avail of both on and off-farm organic grant scheme from the DAMF to aid in developing their enterprise and this contributed to an increase in investment on organic farms.

The dependence of both organic and conventional cattle farms on direct payments can be clearly seen where 71 per-cent of direct payments were retained on organic farms compared to 57 per-cent retained on conventional farms (Table 5). These results are also similar to findings in previous studies (Connolly *et al* 2008; Moran and Connolly, 2007).

Table 6 shows a breakdown of selected direct costs on organic and conventional farms.

There was an especially large difference in direct costs between organic and conventional farms with direct costs/ha 53 per-cent lower on organic farms. Spending on concentrate feed, pasture costs and winter forage was lower on organic farms on a farm level and significantly lower per hectare. Spending on organic farms was 55 per-cent lower/ha on concentrate feed, 76 per-cent lower/ha on pasture costs and 52 per-cent lower/ha on winter forage costs.

Table 6 Selected direct costs on organic and conventional farms 2010.

	ORGANIC		**CONVENTIONAL**	
	€/farm	**€/ha**	**€/farm**	**€/ha**
Gross Output	**49,313**	**893**	**31,953**	**1,008**
Direct costs	**8,996**	**163**	**11,057**	**349**
incl. concentrate feed	2,766	50	3,498	110
incl. pasture costs	650	12	1,569	50
incl. Winter forage costs	2,738	50	3,335	105
incl. Veterinary and medicine	1,145	21	1,152	36
incl. AI and other service fees	104	2	88	3
incl. other direct costs e.g. seed, straw etc.	1,593	29	1,145	45
Gross margin	**40,344**	**731**	**20,896**	**659**

Source: National Farm Survey 2010

The composition of direct payments on organic and conventional farms is shown in Table 7. Direct payments per farm were 40 per-cent higher on organic farms (€27,255/farm v's €14,939/farm) but broadly similar per hectare (€494/ha v's €471/ha). The decoupled Single Farm Payment (SFP) is the main contributor followed by the REPS/organic and other environmental scheme payments on both organic and conventional farms but REPS/organic payments were significantly higher per ha on organic farms due to the extra organic payments which organic farmers can avail of. Decoupled Single Payments (SFP) per farm were 13 per-cent higher on organic farms (€13,311/farm v's€9,978/farm) but 22 per-cent lower per hectare (€241/ha v's €314/ha).

Table 7 Direct payments on organic and conventional cattle farms 2010.

	ORGANIC		CONVENTIONAL	
	€/FARM	€/HA	€/FARM	€/HA
Direct payments total	**27,255**	**495**	**14,939**	**471**
incl. SFP.	13,311	241	9,978	314
incl. REPS and OFS/SM6 organic top-up for organic farms	7,346	133	2,271	68
incl. DAS	2,887	50	1,788	54
incl. other schemes (sheep grassland, SCWS, forestry etc)	3,711	67	902	28

Source: National Farm Survey 2010
SFP = Single Farm Payment; REPS = Rural Environment Protection; OFS = Organic Farming Scheme; SM6 = Supplementary Measure 6 (Organic REPS top-up); DAS = Disadvantaged Area Scheme.

Table 8 shows the distribution of market margin (ie. gross margin minus direct payments) per hectare on organic cattle and conventional farms.

Table 8 Distribution of market margin (€ per hectare) on organic and conventional cattle farms 2010.

MARKET MARGIN €/HA)	ORGANIC	CONVENTIONAL
<0	0%	17%
0-150	36%	29%
150-300	36%	32%
300-500	14%	14%
>500	14%	8%

Source: National Farm Survey 2010

Market margin shows gross margin returns if there were no direct payments. Organic farmers were better able to cover costs of production in this scenario. No organic farms recorded a negative market margin, whereas 17 per-cent of conventional farmers made a financial loss when only direct farm costs were considered. At the opposite end of the distribution, 14 per-cent of organic farmers made a market margin of €500 per ha or more compared to 8 per-cent of conventional farms.

Socio-Economic Data on Organic and Conventional Cattle Farms

Table 9 shows socio-economic data for organic and conventional cattle farms. Organic farmers were younger and a higher percentage of them were married. This is similar to that found in previous studies (Connolly *et al* 2008; Moran and Connolly, 2007). Off-farm income now assumes an important role in ensuring the sustainability of farm households (O'Brien and Hennessy, 2009). Organic households more often had off-farm employment – 86 per-cent of organic households had either the farmer or spouse earning an off-farm income compared to 53 per-cent of conventional households. The percentage of households with the farmer or spouse working off-farm has declined on conventional farms but has increased on organic farms compared to previous studies (Connolly *et al*.,2008; Moran and Connolly, 2007).

Table 9 Socio-economic data on organic and conventional cattle farms 2010.

	ORGANIC	CONVENTIONAL
Age farmer	50	56
Married (%)	86	68
Off-farm Income Holder (%)	33	39
Off-farm Income Spouse (%)	67	30
Holder and/or spouse with off-farm job	86	53

Source: National Farm Survey 2010

Table 10 shows the amount of labour used on organic and conventional cattle farms. One labour unit is defined as at least 1,800 hours worked on the farm by a person over 18 years of age. Persons under 18 years of age are given the following labour unit equivalents: 16-18 years: 0.75; 14-16 years: 0.50. Note: an individual cannot exceed one labour unit even if he/she works more than 1,800 hours on the farm. The amount of labour was higher on organic farm at 1.10 labour units comapared to 0.96 labour units on conventional farms.

Table 10 Labour units per farm on organic and conventional cattle farms 2010.

	ORGANIC	CONVENTIONAL
Labour Units unpaid	1.09	0.94
Labour units paid	0.01	0.02
Labour units total	**1.10**	**0.96**

Source: National Farm Survey 2010.

This was broadly similar to that found in previous studies (Connolly *et al* 2008; Moran and Connolly, 2007).

Table 11 separates out organic and conventional farmers into different farm economic viability classes based on the socio-economic data in Table and 5 and 9. "Viable" farms earn greater than the average agricultural wage rate per labour unit per year from the farm taking into account a 5 per-cent return on all non-land assets eg. machinery and livestock on the farm (Commins and Frawley, 1996). "Sustainable" farms earn less than the average agricultural wage rate per labour unit per year but either the farmer or the spouse has off-farm employment. "Vulnerable" farms earn less than the average agricultural wage rate per labour unit per year and neither the farmer nor the spouse have off-farm employment

Table 11 Farm economic viability of organic and conventional cattle farms 2010.

	ORGANIC	CONVENTIONAL
Viable	**36%**	**11%**
Sustainable	**50%**	**48%**
Vulnerable	**14%**	**42%**

Source: National farm Survey, 2010.

The data shows that 36 per-cent of organic farmers were "viable" compared to 11 per-cent of conventional farms. Approximately half of both organic and conventional cattle farms were considered "sustainable". A significantly lower percentage of organic farmers are considered "vulnerable" compared to conventional farms – 14 per-cent of organic cattle farmers were "vulnerable compared to 36 per-cent of conventional farmers.

Conclusions

The organic sector in Ireland although still relatively small compared to the European average is growing at a steady rate. This paper examined the technical and financial performance of organic and conventional cattle production in Ireland for 2010. Despite technical performance as measured by market output per hectare and stocking rate being higher on conventional cattle farms, economic performance as measured by Family Farm Income (FFI) was higher on organic cattle farms. Stocking rates on organic farms were 22 per-cent lower on organic farms (0.91 L.U./ha organic v's 1.16 L.U./ha conventional).

FFI per hectare was 30 per-cent higher on organic cattle farms (€349/ha organic v's €268/ha conventional). Higher FFI on organic farms was mainly due to 26 per-cent lower production costs/ha (especially direct costs) on organic farms (€545/ha v's €740/ha) and to as lesser extent higher direct payments/ha (€495/ha organic v's €471/ha conventional).

It is clear that direct payments remain a vital part of FFI on both organic and conventional cattle farms. Organic farms retain more of their direct payments than conventional farms with 71 per-cent and 57 per-cent of direct payments retained as FFI on organic and conventional farms respectively.

While making comparisons with previous similar studies in Ireland is conjectural, as different farms were used from study to study, this study reflects a tightening of the gap in stocking rate, market output and overhead costs between organic and conventional farms. This may be a reflection on the increased technical performance of organic farms, better linkages among organic cattle farmer buyers/sellers, improved access to premium organic beef prices, and the increased levels of net new investment now taking place on many organic farms.

Off-farm income remains a vital component of the economic viability of both organic and conventional cattle farming households. Organic cattle farmers had a more viable socio-economic profile with 86 per-cent of organic farms classified as "sustainable" or "viable" compared to 59 per-cent of conventional cattle farmers. This is due to higher Family Farm Incomes on organic farms and more organic farms with either the farmer or their spouse earning an off-farm income.

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