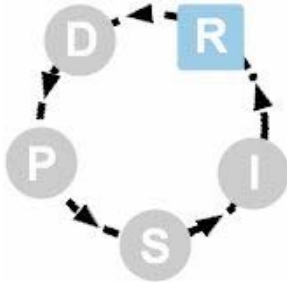


# IRENA Methodology and Data Fact Sheet

## Indicator 5.2 – Organic Farm Incomes

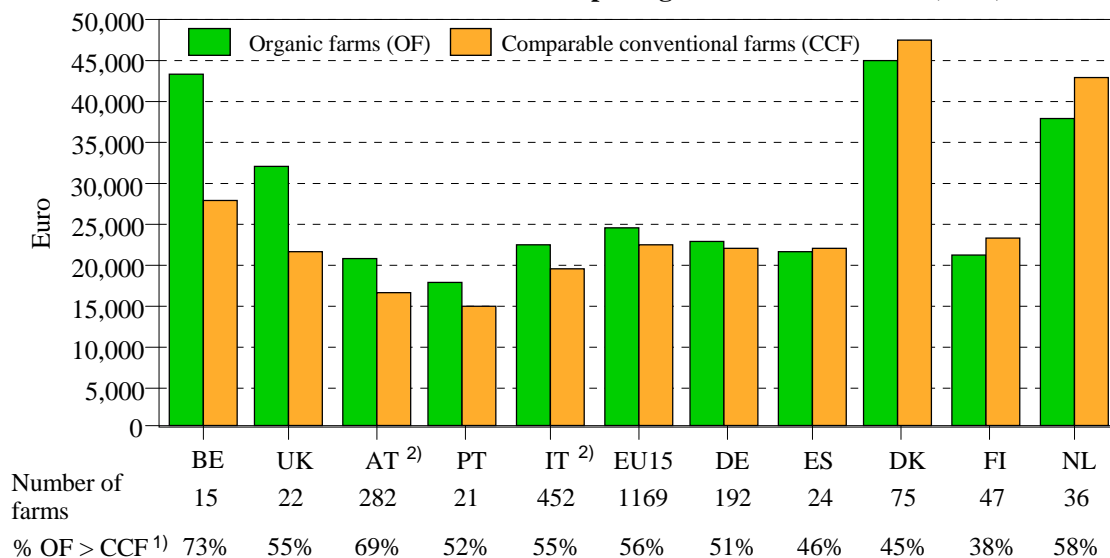
<p><u>Indicator Definition</u></p> <p>This indicator shows the relative financial performance of organic farms, on the basis that financial viability is a key determinant of both uptake of and continued organic management. The indicator is split into two parts:</p> <p>5.1: organic producer prices and market share (to indicate levels of consumer demand for organic products and market signals to organic producers)</p> <p>5.2: organic farm incomes compared to similar conventional farms (to indicate combined impacts of prices, agri-environmental support payments and other factors on financial viability of organic holdings)</p> <p>This fact sheet is focused specifically on Indicator 5.2.</p> <p><u>Indicator links</u></p> <p>Input Indicator Links:</p> <p>No. 1 'Agri-environmental support'</p> <p>Output Indicator Links:</p> <p>No. 7 'Organic land area', No. 8 'Fertiliser consumption', No. 13 'Cropping/livestock patterns', No.14 'Management practices', and No. 15 'Intensification/extensification'</p>	
<p><u>Key message</u></p> <p>EU-FADN data for 2001 (see headline graphs) shows that organic farms generate comparable incomes to conventional farms. In particular returns to family and employed labour are similar, which is significant given the perception of organic farming as labour intensive.</p> <p>These indicators (measured as Farm Net Value Added per Agricultural Working Unit (FNVA/AWU) and Family Farm Income per Family Working Unit (FFI/FWU)) provide the best basis for comparisons across countries, because income per holding or per hectare values are highly influenced by wide variability in farm size and type characteristics.</p> <p>While in most countries the results are very similar, some show large differences. However, these results should be treated with caution as the sample sizes are very small in certain countries (BE, ES, PT, UK) so that no general conclusions on the profitability of organic farms can be drawn. Small sample sizes mean that it is also not currently possible to differentiate the results EU-wide on either a regional or farm type basis.</p> <p>An analysis of time series data for selected countries shows that, in these countries, organic farm incomes were on average slightly higher than, and have followed similar trends to, those for comparable conventional farms over the last decade, although there is high variability in the samples. The similarity of the trends for conventional and organic farms over the years indicates that external factors like climate, general price trends and general agricultural policy influence both farming systems in a similar way, and that these may be more important than differences in management in determining financial performance.</p> <p>The methodology described for obtaining data from comparable conventional farms is a result of research work on farm business data at national and EU level. Further modifications to FADN methodology are recommended in order a) to identify the proportion of holdings managed organically in cases where they are not fully organic, b) to make the weighting system more flexible, so that more of the organic holdings for which data are available at national level can be included in the FADN database, and c) to improve typologies with reference to organic farming. These steps would help to increase sample size, enabling a more differentiated analysis, and providing the possibility for adjustments to be made to improve the representativity of the data.</p>	

# IRENA Methodology and Data Fact Sheet

## Indicator 5.2 – Organic Farm Incomes

### Headline graphs

**Farm Net Value Added per Agricultural Work Unit (2001)**

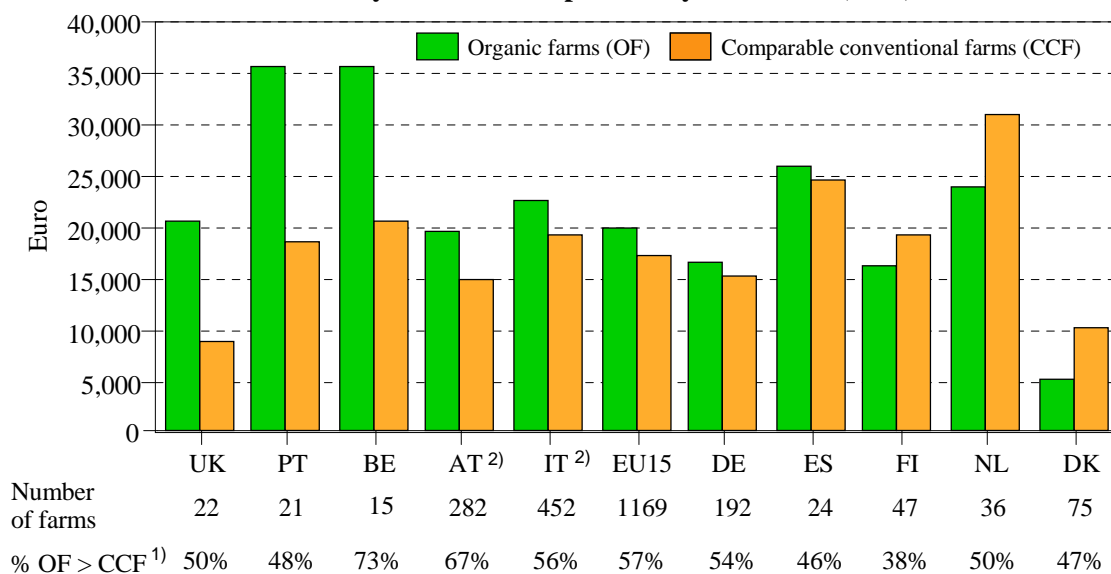


1) Share of organic farms in the sample with a higher FNVA/AWU than the respective comparable conventional farm group.

2) Difference in the sample means of FNVA/AWU statistically significant ( $p < 0.05$ ).

Source: Offermann (2004) based on INLB-EU-GB AGRI/G.3.

**Family Farm Income per Family Work Unit (2001)**



1) Share of organic farms in the sample with a higher FFI/FWU than the respective comparable conventional farm group.

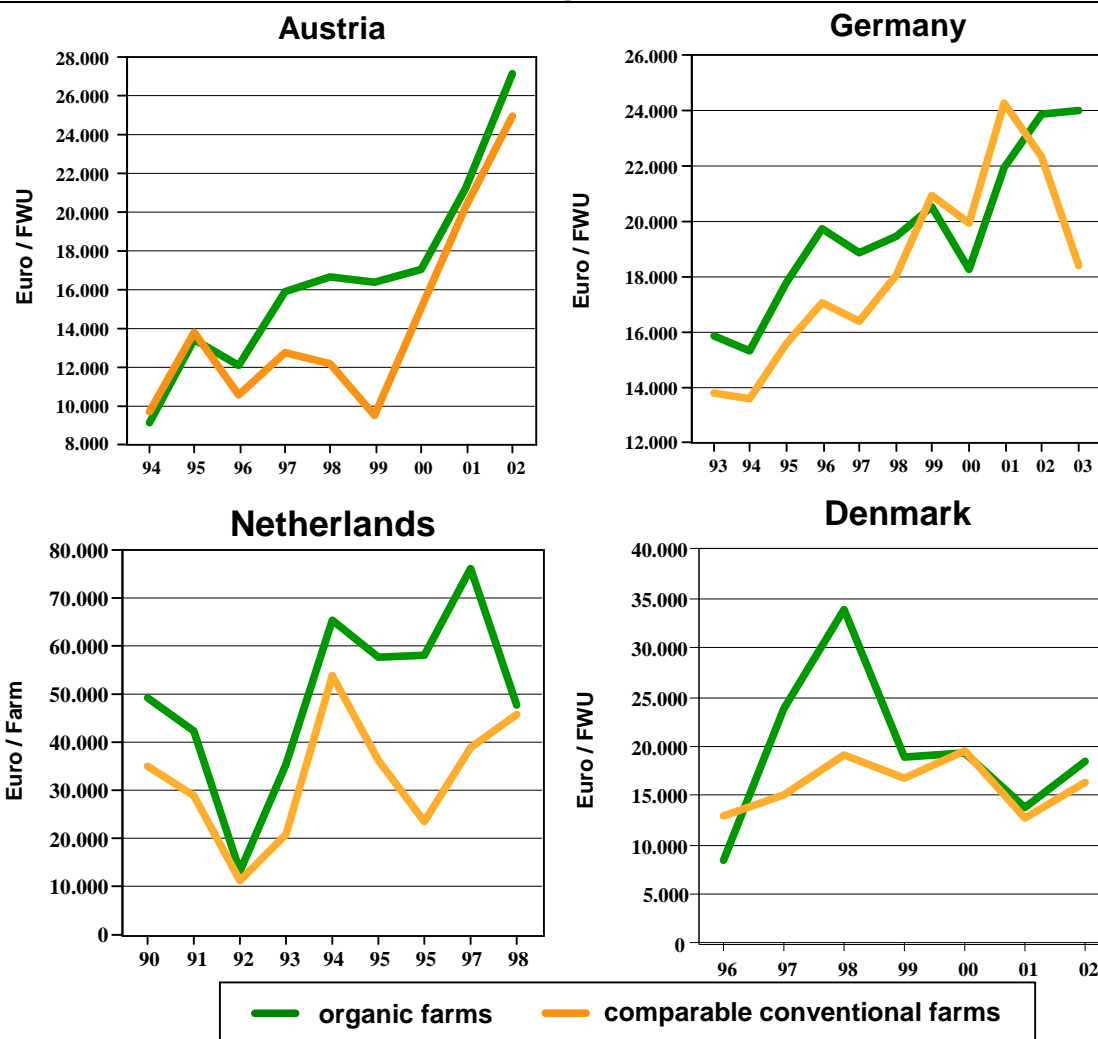
2) Difference in the sample means of FFI/FWU statistically significant ( $p < 0.05$ ).

Source: Offermann (2004) based on INLB-EU-GB AGRI/G.3.

The graphs are discussed in the results section below. It is not possible given small sample sizes to produce a regional breakdown of the data, and therefore no maps showing regional differences are presented. However, time series data for four countries can be shown (see results section for explanation of differences between countries).

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## Indicator 5.2 – Organic Farm Incomes



Income indicator: Family Farm Income per Family Work Unit (FWU; definition depending on country, approx. 2200 working hours per year).

DK: Dairy Farms. NL: Arable Farms. Other countries: All farm types.

Source: Offermann (2004) based on BMLF, BMVEL, DIAFE and LEI.

### Methodological Approach

#### Introduction

Organic agriculture can be defined as a production system which puts a high emphasis on environmental protection and animal welfare by reducing or eliminating the use of GMOs and synthetic chemical inputs such as fertilisers, pesticides and growth promoters/regulators. Instead organic farmers promote the use of cultural and agro-ecosystem management practices for crop and livestock production. The legal framework for organic farming in the EU is defined by Council Regulation 2092/91 and amendments.

The environmental benefits of this approach to agriculture are now well documented (e.g. Stolze *et al.*, 2000; Shepherd *et al.*, 2003; Hole *et al.*, 2005), so that an economically sustainable expansion of organic farming can be seen to have direct benefits across a wide range of environmental issues.

The aim of this indicator is to identify underlying economic factors ("driving forces") that are behind the development of organic farming in the EU by influencing the decision of farmers to start or to continue an organic production system. This relates in particular to the income they can receive from the production and marketing of organic products and the potential for incomes to be sustained in the longer-term.

While the price received is an important component of income and therefore affects the relative viability of organic farming, incomes are also significantly affected by yields, production costs and support payments. Prices and support payment levels may provide a key stimulus to farmers

# IRENA Methodology and Data Fact Sheet

## Indicator 5.2 – Organic Farm Incomes

converting, but the actual incomes generated over time are likely to influence whether farmers remain in organic production. Therefore, income is the most important indicator, but its interpretation requires an understanding also of the underlying components (see Lampkin and Padel, 1994; Offermann and Nieberg, 2000).

### Methods and tools

Financial data relating to organic farming has only recently started to become the focus of attention for governments and researchers, with the situation varying significantly from country to country. Many older studies were one-off research projects, covering one to three years' data. Several countries have introduced an identifier variable for organic farms in their national FADNs and have been providing income comparisons on this basis for some years now. Since 2000, there has been an effort to gather more data on organic farming from FADN at the European level. This constitutes a suitable and readily available resource for income comparisons, but there are a few specific problems relating to the nature and representativeness of the organic farms:

- a. Identification of organic holdings: The identifier variable for organic holdings (included in all FADN systems since 2000/01) usually indicates whether the holding/land area is either a) fully organic or b) in-conversion or part conventional/part organic. In the latter case, the indicator may not give sufficient indications as to the proportion of the holding that is managed organically and there are significant variations in how this is implemented nationally. Therefore, only fully organic farms can currently be included in the analysis, even if this means reducing farm sample sizes in countries where part-conversion is widespread. In future, it would be desirable for EU-FADN to differentiate wholly organic, in-conversion to wholly organic, and partially organic farms. For partially organic farms, information on the crop area and livestock enterprises managed organically should be included to allow these farms to be used in income comparisons.
- b. Obtaining a representative sample: There is no specific methodology in place to ensure that any organic sample thus derived is representative of organic farms overall. This represents a problem especially in countries where organic holdings represent only a small proportion of farms. Therefore, generally no extrapolation to all farms in the sector can be done, and aggregation has to be based on simple averages rather than weighted averages. In future, EU-FADN should consider the possibility of organic management as a stratification criterion and should make weighting criteria more flexible so that more organic farms from national databases can be included in the EU-FADN database.
- c. Defining farm type/size: Within FADN, types of farming are defined on the basis of the contributions of the different lines of production to the total standard gross margin (SGM). As separate SGMs for organic farming are not available, the conventional farm type classification is used as an approximation of the farm type and business of organic farms. To take into account the potential misclassifications, only broad farm type categories and no detailed farm types can be applied.
- d. Selecting comparable conventional farms: The fundamental question underlying the income comparisons for this IRENA indicator is: What profit would an organic farm make if it was managed conventionally? This requires the identification of suitable conventional farms and it is necessary to ensure that any data used is genuinely comparable (Lampkin and Padel 1994; Offermann and Nieberg, 2000). It is not sufficient simply to compare the average for the organic farms with the average for all farms in the FADN sample, as the composition in terms of type, size and locality may be very different. The choice of variables for the selection of comparable conventional farms has to be restricted to 'non-system determined' factors, so that farms are similar in terms of production potential or resource endowment (land quality/area, farm type, region, capital infrastructure (e.g. buildings, quotas) as well as management capacities of the producer). Other inputs, including labour, need not be similar as they will reflect production intensity and how the fixed resources are used for specific activities to achieve the desired objectives. The restriction to 'non-system determined' factors often severely limits the number of indicators that can be used, especially as information on natural production conditions in farm accounts is generally sparse.

The approaches adopted for selecting comparable conventional farms in national studies differ, so that results between countries cannot be easily compared, and may not be consistent from year to year making it problematic to correctly interpret changes in relative profitability over time. As a consequence, within the EU-CEE-OFP project (see data sources), guidelines for harmonisation of income comparisons of organic and conventional farms have been developed, which can serve as a basis for a 'code of good practice' (Offermann in Recke *et al.*, 2004). The

# IRENA Methodology and Data Fact Sheet

## Indicator 5.2 – Organic Farm Incomes

preferred approach is to select a group of similar conventional farms to compare with each individual organic farm, so that the impact of differences in management ability can be minimised. The selection of the comparison groups should be done by selecting groups of farms that fall within a specified range of values for defined parameters so that comparable conventional farms should

- have similar natural production conditions
- be located in the same 'region'
- have a similar endowment with production factors
- be of a similar farm type

The exact specification of the variables can depend on national circumstances and data availability. For the analysis of the EU-FADN data presented here, the specifications below were used.

It should be noted that if organic farms present a sufficiently high number of all farms in a region, the comparison procedure may become easier. Specific matching may not be needed anymore, as the organic farms can simply be compared to all conventional farms of similar farm type and same size in the respective region.

### Variable specifications for selecting comparable conventional farms:

Area	Indicator specification	Code in EU-FADN
A	1. same (not) less favoured (mountain) area status	A39
	2. same altitude zone	A41
B	same FADN region (NUTS 1)	A1
C	1. similar size in hectare (+/- 20% or +/- 10 ha)	SE025
	2. similar milk production (+/- 20% or +/- 25t)	K162QQ + K163QQ
	3. similar sugar beet production (+/-20% or +/- 100t)	K131QQ
D	8 farm type categories based on principal farm type classification	TF8

### Selected income indicators

The indicator Farm Net Value Added (FNVA) provides information on the remuneration of fixed factors of production (work, land and capital), irrespective of their ownership (external or family factors). As a result, holdings can be compared irrespective of their family/non-family nature of the production factors. The indicator is however sensitive to the ratio of (intermediate consumption + depreciation)/fixed factors. The indicator can be used to compare the profitability of similarly structured farms. To account for possible differences in the labour intensity in organic and conventional farms, the FNVA is related to the agricultural labour (agricultural work units - AWU) to be remunerated on the farms.

The indicator Family Farm Income (FFI) provides information on the remuneration of fixed factors of production owned by the farm family and the entrepreneur's risks. To account for possible differences in the family labour use in organic and conventional farms, the FFI is related to the family labour (family work units - FWU) to be remunerated on the farms.

It would also possible to relate incomes to land area or holdings. Family farm income per ha utilisable agricultural area (FFI/ha) is one possible measure, but as discussed in the results section, the high variability in farm size and type between countries makes its use inappropriate for cross country comparisons. This would also be the case for FFI per holding. The main focus of this indicator is therefore on the two measures of income per labour unit defined above.

### Time series analysis

As the national results shown indicate, time series data can be more valuable than single period snapshots for understanding the developing income situation on organic farms. Such results as are presented are not consistent in terms of methodology, variables or time periods, making cross country comparisons difficult. Time series analyses of profits of organic and comparable conventional farms using a harmonised approach and based on a set of identical farms will become available for AT, DK, DE, IT from the EU-CEE-OFP project (see data sources) at the end of 2004. There is a need to improve the potential for time series analysis by ensuring sufficient identical farms of appropriate types and sizes are available.

### Data sources

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## Indicator 5.2 – Organic Farm Incomes

Financial data relating to organic farming has only recently started to become the focus of attention for governments and researchers, with only limited data available before 2000 (Lampkin and Padel, 1994; Offermann and Nieberg, 2000). Since 2000<sup>1</sup>, there has been an effort to gather more data on organic farming from FADN at the European level. A preliminary analysis of the data availability and specifically the issue of support payment levels on conventional and organic farms was conducted by Offermann as part of a report for DG Environment (Haering *et al.* 2004). Since the accounting year had started in almost all member states when the respective Commission Regulation 1122/2000 entered into force, this identification code was not yet available for all member states. The situation in 2001 has improved significantly. For confidentiality reasons, results may be published only for farm samples containing at least 15 farms. Table 5.2-1 and Table 5.2-2 provide an overview of the respective sub-samples available in the FADN accounting year 2000 and 2001. On an 'EU'-level<sup>2</sup>, the samples are large enough to allow an analysis for most farm types, but it is more problematic at a regional or national level.

**Table 5.2-1: Number of organic farms in the FADN accounting year 2000**

<i>Farm types</i>	<i>EU15</i>	<i>AT</i>	<i>BE</i>	<i>DE</i>	<i>DK</i>	<i>ES</i>	<i>FI</i>	<i>GB</i>	<i>LU</i>	<i>NL</i>	<i>PT</i>
<b>All</b>	<b>645</b>	<b>316</b>	11	<b>127</b>	<b>75</b>	<b>25</b>	<b>58</b>	9	1	7	<b>16</b>
<b>Arable</b>	<b>110</b>	<b>29</b>		<b>30</b>	<b>15</b>	11	<b>17</b>			5	3
<b>Horticultural</b>	<b>18</b>			6	9	2	1				
<b>Wine</b>		5		2							1
<b>Perm. Crops</b>	<b>22</b>	3		2	1	10					6
<b>Dairy</b>	<b>316</b>	<b>200</b>	4	<b>41</b>	<b>42</b>		<b>19</b>	6	1	1	2
<b>Graz.livestock</b>	<b>80</b>	<b>51</b>	6	7	2		8	3		1	2
<b>Pigs/Poultry</b>		<b>2</b>			1		3				
<b>Mixed</b>	<b>85</b>	<b>26</b>	1	<b>39</b>	5	2	10				2

Samples with at least 15 farms are highlighted by bold figures.

Source: FAL Braunschweig (Haering *et al.*, 2004)

**Table 5.2-2: Number of organic farms in the FADN accounting year 2001**

<i>Farm types</i>	<i>EU-15</i>	<i>AT</i>	<i>BE</i>	<i>DE</i>	<i>DK</i>	<i>ES</i>	<i>FI</i>	<i>GB</i>	<i>IT</i>	<i>LU</i>	<i>NL</i>	<i>PT</i>
<b>All</b>	<b>1353</b>	<b>296</b>	<b>17</b>	<b>235</b>	<b>79</b>	<b>27</b>	<b>55</b>	<b>28</b>	<b>544</b>	3	<b>40</b>	<b>29</b>
<b>Field crops</b>	<b>226</b>	<b>26</b>		<b>57</b>	<b>20</b>	11	<b>16</b>		<b>82</b>		6	8
<b>Horticulture</b>	<b>22</b>			11	1				1		6	3
<b>Wine</b>	<b>30</b>	6		5					<b>16</b>			3
<b>Perm. Crops</b>	<b>90</b>	3		4		12			<b>64</b>			7
<b>Milk</b>	<b>428</b>	<b>188</b>	8	<b>81</b>	<b>46</b>		<b>17</b>	12	<b>51</b>	1	<b>24</b>	
<b>Graz. livestock</b>	<b>368</b>	<b>49</b>	6	<b>20</b>	3		9	13	<b>261</b>		1	6
<b>Granivores</b>	7	1	1	2	1		1	1				
<b>Mixed</b>	<b>182</b>	<b>23</b>	2	<b>55</b>	8	4	12	2	<b>69</b>	2	3	2

Samples with at least 15 farms are highlighted by bold figures.

Source: European Commission (D'Avino, pers. communication)

<sup>1</sup> The actual time period covered differs by member state, as accounting years are defined according to national standards. See European Communities (2003a) for details.

<sup>2</sup> Here and in the following paragraphs, 'EU'-results are referring to the results based on the ten countries where organic farms can be identified in the accounting years 2000 and 2001 respectively.

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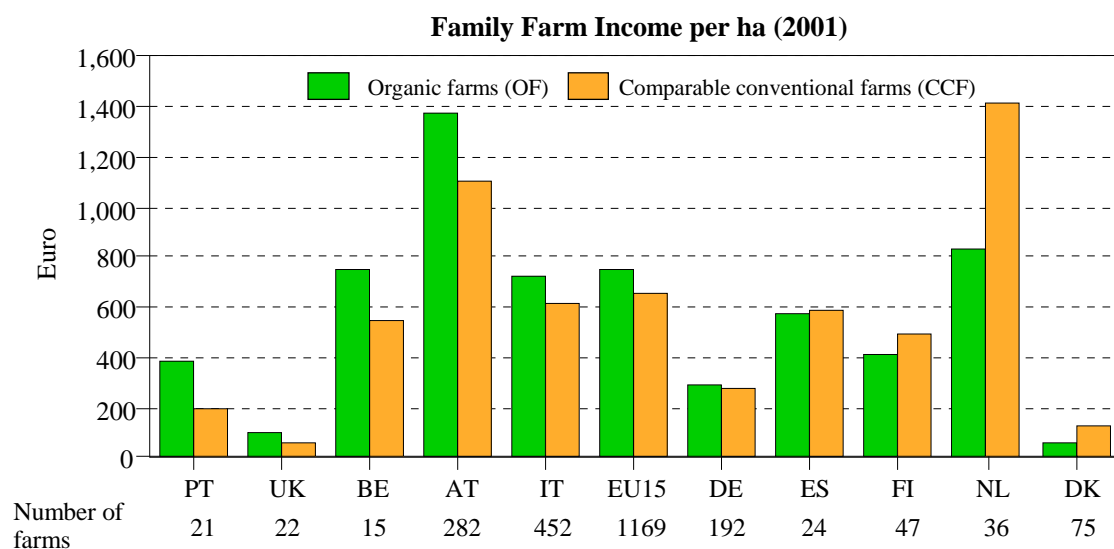
## Indicator 5.2 – Organic Farm Incomes

### Results

On average, organic and comparable conventional farms achieved quite similar farm net value added per annual work unit (FNVA/AWU) in the EU in 2001. It should be noted that the variance of this indicator is high in both the organic and the conventional farm samples. As a consequence, in combination with the generally small sample sizes, the difference of the mean is statistically significant only in Italy and Austria. In these two countries, on average FNVA/AWU is higher in organic than in comparable conventional farms. However, even with average FNVA/AWU being 25 % higher in the organic farm sample in Austria, about one third of the organic farms in this sample fare worse than the respective comparable conventional farm, indicating the significant influence of farm and farm manager specific characteristics. The small number of holdings for certain countries (BE, ES, PT, UK) mean that for these countries, no general conclusions on the profitability of organic farms can be drawn.

In most countries, family farm income per family work unit (FFI/FWU) on organic farms is also similar to or slightly higher than that on conventional farms, but there is much greater variation between countries than for FNVA/AWU. This may be a reflection of differences in the farm types and size represented in the different countries.

As indicated in the methodology section, family farm income per hectare could also be used. However, as can be seen from the graph below, this indicator is much more variable due to large differences in farm size and type, and therefore it is inadvisable to make cross-country comparisons. Within countries, the relative performance is similar to that for FFI/FWU; this would also be the case if values were shown per holding.



Source: Offermann (2004) based on INLB-EU-GB AGRI/G.3.

Time series data, showing the development of organic farming incomes, are also relevant. Since only 2000 and 2001 data are available from EU-FADN, the potential for time series presentations is illustrated using published national FADN data for Austria, Germany, Netherlands and Denmark. Time series data are also available for Italy, UK and Finland (for full details see Offermann, 2004; Haering et al., 2004; Bont et al., 2004; Recke et al. 2004). An advantage of these national time series data is that data for a larger sample of farms is usually published by national agencies on a regular basis and easily accessible. These indicate that, in these countries, organic farm incomes were on average slightly higher than, and have followed similar trends to, those for comparable conventional farms over the last decade, although there is high variability in the samples. The similarity of the trends for conventional and organic farms over the years indicates that external, non-system-inherent factors like climate, general price trends and general agricultural policy influence both farming systems in a similar way, and that these may be more important than differences in management.

In the national time series graph presented above, it should be noted that the years (X-axis), farm types included in samples (dairy in DK; arable in NL) and units used (per farm not per labour unit in NL) are not identical across all countries. Therefore it is more important to focus on comparisons between organic and conventional within a country, not between countries. For the Danish dairy farms, the impact of milk price reductions as a result of over-supply following large scale conversion can be clearly seen, although incomes have stabilised at levels similar to conventional. For the



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## Indicator 5.2 – Organic Farm Incomes

German farms, the results appear to indicate improved performance possibly associated with enhanced policy support and improved market conditions since 2000, but the results need to be interpreted with caution due to changes in the methodology for selecting comparable conventional farms.

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### European-level research projects including analysis of organic farm income data:

DG ENVI: Environmentally Friendly Farming Systems and the Common Agricultural Policy (ENV.B.1/ETU/2002/0448r) – final report published as Haering *et al.*, 2004

EISfOM: European Information System for Organic Markets (QLK5-2002-2400) – see Recke *et al.*, 2004 and [www.eisfom.org](http://www.eisfom.org)

EU-CEE-OFP: Further development of European organic farming policy. (QLK5-2002-00917) – in progress, see [www.irs.aber.ac.uk/euceeofp](http://www.irs.aber.ac.uk/euceeofp) for information on developments

OFCAP: Organic Farming and the CAP (FAIR3-CT96-1764) – reports (including Offermann and Nieberg, 2000) published as Organic Farming in Europe: Economics and Policy series, Volumes 1-10, further details at [www.uni-hohenheim.de/~i410a/ofeurope](http://www.uni-hohenheim.de/~i410a/ofeurope)

TAPAS: Eurostat commissioned research on IRENA indicator 5 (Project code 30026) - see Bont *et al.* 2004

### EU Regulations defining organic farming:

Regulations 2092/91 and 1804/1999: 1) [http://europa.eu.int/lex/en/consleg/main/1991/en\\_1991R2092\\_index.html](http://europa.eu.int/lex/en/consleg/main/1991/en_1991R2092_index.html) and 2) [http://europa.eu.int/servlet/portail/RenderServlet?search=DocNumber&lg=en&nb\\_docs=25&domain=L&egislation&coll=&in\\_force=NO&an\\_doc=1999&nu\\_doc=1804&type\\_doc=Regulation](http://europa.eu.int/servlet/portail/RenderServlet?search=DocNumber&lg=en&nb_docs=25&domain=L&egislation&coll=&in_force=NO&an_doc=1999&nu_doc=1804&type_doc=Regulation)



# IRENA Methodology and Data Fact Sheet

## Indicator 5.2 – Organic Farm Incomes

### Data

IRENA IND 5B.xls

This file also includes data used for the headline graphs.

### Meta data

#### Technical information

1. Data source: FADN (EU and National)
2. Description of data: The Farm Accountancy Data Network (FADN) is an instrument for evaluating the income of agricultural holdings and the impacts of the Common Agricultural Policy. The concept of the FADN was launched in 1965, when Council Regulation 79/65 established the legal basis for the organisation of the network. It consists of an annual survey carried out by the Member States of the European Union. An indicator identifying organic farms was introduced for all MS in 2000.
3. Geographical coverage: Available for EU-15 for agricultural regions. FADN figures are available on an annual basis for the European Union as a whole, distinguishing between about 100 regions by farming type (NUTS 0 or 1). The spatial level varies from the whole member state to regional level (the regions are also different from the regions as defined in FSS). Due to small sample size, only in a few countries can organic farming results be analysed at regional level.
4. Temporal coverage: Organic farms partial coverage 2000, complete 2001.
5. Methodology and frequency of data collection: FADN consists of an annual survey carried out by the Member States of the European Union. The services responsible in the Union for the operation of the FADN collect every year accountancy data from a sample of the agricultural holdings in the European Union. Derived from national surveys, the FADN is the only source of micro-economic data that is harmonised, i.e. the bookkeeping principles are the same in all countries. Holdings are selected to take part in the survey on the basis of sampling plans established at the level of each region in the Union. The survey does not cover all the agricultural holdings in the Union but only those which due to their size could be considered commercial.
6. Methodology of data manipulation: Standardised manipulation rules can be applied to specified FADN variables, with particular reference to selection of comparable conventional farm groups.

#### Quality information

7. Strength and weakness (at data level): Strength lies in harmonised FADN system, weakness mainly due to small and unrepresentative samples (see methodology section)
8. Reliability, accuracy, robustness, uncertainty (at data level): Subject to reservations about sample size and representativity for organic farms, the FADN procedures ensure good reliability, accuracy, robustness and low levels of uncertainty.
9. Overall scoring (give 1 to 3 points: 1=no major problems, 3=major reservations):
  - Relevancy: 1
  - Accuracy: 2 (small and non-representative samples)
  - Comparability over time: 3 (data not currently available at EU level, need for larger, identical samples; problems can potentially be resolved over time)
10. Comparability over space: Good for income per labour unit indicators, but poor per ha and per holding due to differences in farm type and size