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SID 5 Research Project Final Report

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Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

BACKGROUND

Growth in the market for organic vegetables was reported to be about 30 per cent per annum between 1997 and 2002. Yet details of individual vegetable supply levels and wider market circumstances were unknown although it was suggested that 70 per cent of organic vegetables were imported. DEFRA-funded study OF 0307, in 2001, reported the market was changing rapidly and observed imbalances in demand and supply. Study OF 0307 also highlighted the need for growers and marketers to have an overview of the market, knowledge of supply levels and an indication of market opportunities, especially if UK self-sufficiency of 57 per cent (in 2001) was to be increased.

This project (OF 0342) built on and updated work undertaken in OF 0307. The project was novel in that, for the first time in the UK, ongoing information covering all sectors of the organic vegetable market was provided for growers, marketers, policy makers and other stakeholders.

OBJECTIVES

To provide detailed market information, for three seasons from 2002 to 2004, on the total market and UK supply of individual organic vegetable crops, and to identify trends throughout the UK growing season.

METHODS

This project was led by HDRA and conducted in collaboration with the Soil Association, Elm Farm Research Centre and the Institute of Rural Sciences (University of Wales, Aberystwyth). HDRA undertook data collection and analysis. All partners assisted in methodology design, reviewing data and disseminating results.

Data were collected from UK organic vegetable pre-packers and wholesalers on tonnes, values and sources of organic vegetables traded and trends in the market, for each season. Data were corroborated through interviews with a range of market actors. Crop area data was obtained from the Soil Association and DEFRA. In 2004 a supplementary survey of direct sales operators was performed. All data was cross-referenced with other published sources of information where available. On 28th February 2006 a seminar was held to disseminate and publicise information from the study.

RESULTS

The study estimated a 42 per cent increase in the total annual retail value of the UK organic vegetable market from £157M in 2002 to £223M in 2004 (Table 1). The annual tonnage traded in the UK increased from 116,126t (2002) to 152,142 (2004), a 31 per cent increase. UK self-sufficiency increased from 61 per

cent in 2002 to 64 per cent in 2004 (a 38 per cent increase in tonnage), however self-sufficiency varied for individual crops. The farm gate value increased 30 per cent from £40.7M (2002) to £51.8M (2004). The area of land used to produce organic vegetables in the UK increased 24 per cent from 5,132ha in April 2003 to 6,364ha in January 2005.

The four main outlets of pre-pack, wholesale, direct sales and processing were identified. The relative share of the organic vegetable market held by each outlet varied over the period of the study. Pre-packers dominated the market in each season although their relative share (by tonnage) fell from 67 per cent in 2002 to 60 per cent in 2004. However total tonnage traded through the pre-pack route increased 19 per cent over the same period. In contrast direct sales increased their share of the market from 12 per cent (2002) to 19 per cent (2004), a 118 per cent increase in tonnage traded. The survey of direct sales operators highlighted the complexity of the direct sales sector. Two main types of direct sales were identified. Firstly when produce was grown and sold directly from the same farm to the consumer, and secondly, when produce was traded between farms before being sold to the consumer. The second type of trade was termed 'multi-farm direct' for this study.

Table 1: Key figures in the UK organic vegetable market 2002-04

Season	Total Market (tonnes)	UK Produce (tonnes)	% UK Produce (tonnage)	UK Farm Gate Value (£M)	Total Market Wholesale Value	Total Market Retail Value (£M)
2002¹	116,126	70,581	61	40	126	157
% Increase (2001 - 2002)	15	20	5	10	13	10
2003¹	122,815	73,592	60	41	160	198
% Increase (2002 - 2003)	6	4	-2	2	26	26
2004	152,142	97,642	64	52	178	223
% Increase (2003 - 2004)	24	33	7	25	11	13
% Increase (2002 - 2004)	31	38	5	27	40	42

¹Data revised due to availability of additional information

CONCLUSIONS AND IMPLICATIONS

The average annual growth rate of the organic vegetable market over the period of the study was 15 per cent (by tonnage). The growth rate for 2004 exceeded the growth rates of both the conventional vegetable and total organic markets. Additionally UK self-sufficiency in organic vegetables increased to 64 per cent, whereas self-sufficiency in conventional vegetables decreased over the study period. UK organic vegetable land area also increased and there was evidence of more developed market linkages and less supply and demand imbalances than in 2001.

Market growth has been driven by increased awareness of health and environmental benefits of organic food and farming. Retailers marketing, including the reduction of prices, and marketing from increasingly professional local and national box schemes, has also driven the market. In 2005 the UK organic vegetable market was predicted to continue to increase by 14 per cent but the study also identified constraints that may prevent UK supply meeting demand, and factors effecting future market development.

Downward price pressures were reported during every season of the study and said to originate from competition between supermarkets. Price pressures were reported to be most severe in the pre-packing supply chain where high specifications further impacted on profitability. Data indicated a general trend of increasing average pre-pack sales prices although prices fluctuated over the study period and varied for individual crops. This, however, does not indicate price, or cost, circumstances at the farm gate level.

Downward price pressures threaten the viability of organic vegetable production. It has been suggested that 80 per cent premiums are required over conventional prices in order for organic production to have similar profitability (HDRA, 2005). As profitability of organic vegetable production falls there is little incentive for new producers to convert, or existing producers to increase production, and a decreasing area of land is in-conversion. Despite this, demand for organic vegetables was predicted to continue to increase at an average of 14 per cent in 2005. Hence a shortfall in UK supply has been forecasted and could lead to increased reliance on imports. Additionally direct sales of organic vegetables have increased substantially over the study period and the complexity of this sector increased. This could illustrate a trend for producers to seek non-supermarket outlets to gain a higher share of the final retail price. The market has also become increasingly complex with some pre-packing and wholesaling companies trading with several market outlets, such as supermarkets and large box schemes. However market transparency and organisation has improved since the first study in 2001 and enabled imbalances in supply to be better managed.

Some technical constraints to the increase of UK production remain, for some crops, such as with long-term storage and availability of organic seed, although the impact of the latter was less than predicted. In

some situations economic concerns, including the profitability of growing a crop, are more of an issue than technical issues.

The market is still small in comparison to the conventional vegetable market, however the organic vegetable market is developing rapidly. In the future the cost of oil could challenge marketing routes that involve substantial transport. Additionally organic vegetable marketers could potentially capitalise on growth in foodservice, public procurement, convenience and processing markets.

The study has identified an increasing demand for up to date market data. However there is still a lack of market transparency in terms of up to date market information, prices and costs of supply.

RECOMMENDATIONS

If a future lack of UK organic vegetable availability is to be avoided government, strategic actors, researchers, growers and advisors must work together to achieve improvements and further understanding in the areas of *market information, prices and costs of supply* and the *food supply chain*.

Continued independent and frequent *market information* collection and dissemination is necessary to enable timely responses to changes in supply or demand. Increased understanding of the complexity of organic vegetable food supply chains, particularly the rapidly developing direct sales sector, is required for accurate and useful market data collection. To improve transparency, thus opportunities to address downward price pressures, regular and timely *price collection* and dissemination, combined with further research, and knowledge exchange, into the *costs of production* is essential. To maintain and improve the sustainability of organic vegetable *food supply chains* identification of sustainable and good practice chains is required, as is knowledge transfer of novel and relevant techniques and information. Additionally research into, and labelling of, the health, social and environmental impacts of organic and local food is necessary to allow consumers to make sustainable food purchasing decisions.

Project Report to Defra

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:
- the scientific objectives as set out in the contract;
 - the extent to which the objectives set out in the contract have been met;
 - details of methods used and the results obtained, including statistical analysis (if appropriate);
 - a discussion of the results and their reliability;
 - the main implications of the findings;
 - possible future work; and
 - any action resulting from the research (e.g. IP, Knowledge Transfer).

BACKGROUND

DEFRA-funded study OF 0307 observed that the UK organic vegetable market was changing rapidly and that in 2001 there were imbalances in demand and supply with poor market communication. Study OF 0307 also highlighted the need for growers and marketers to have an overview of the market, knowledge of supply levels and indications of market opportunities, if the UK self-sufficiency of 57 per cent was to be increased. Therefore the main objective of project OF 0342 was to provide detailed market information for three seasons from 2002, this would enable work undertaken in OF 0307 to be built on and updated and trends to be identified. The project was novel in that, for the first time in the UK, ongoing information covering all sectors of the organic vegetable market was provided for growers and marketers.

SCIENTIFIC OBJECTIVES

The overall aim of this study was to provide detailed market information, for three seasons, from 2002 to 2004, on the total market and supply of individual UK organic vegetable crops throughout the UK growing season. For each season in detail the contract stated this would involve:

- i) Collection of data on specific quantities of individual organic vegetables marketed in the UK from organic pre-packers, wholesalers and retailers, differentiating between UK production and imports and dividing it into months of the year;

- ii) Through contact with organic certifying bodies and DEFRA national statistics collection of data on the area of organic vegetables in each season;
- iii) Data from i) and ii) was to be used to draw up schedules to indicate the balance of supply and demand (in terms of tonnage and hectares of land) for the main UK organically grown vegetables throughout the year;
- iv) To interpret, evaluate and report the data to vegetables growers, marketers, producer organisations, and policy makers.

EXTENT TO WHICH THE OBJECTIVES HAVE BEEN MET

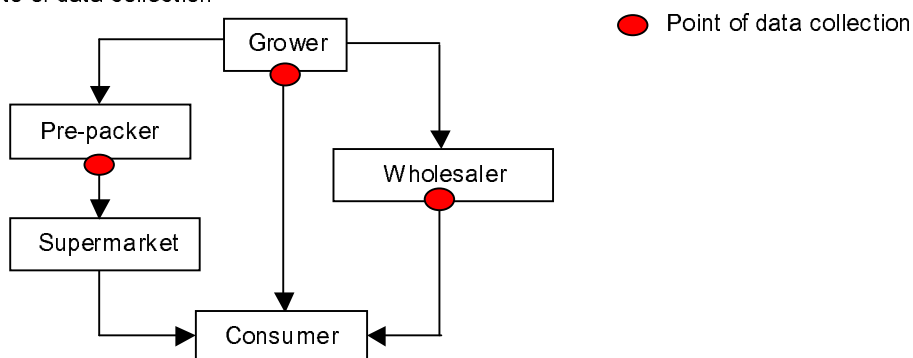
The objectives were broadly met. Detailed market information was provided on an annual basis for three seasons from 2002, including total market tonnages and values traded for 24 different vegetables. However the study was delayed for over a year due to HDRA not receiving a contract until mid-2004.

- i) Data on quantities and values of individual vegetables marketed in the UK were collected from organic vegetable pre-packers and wholesalers and separated between UK production, EU and other imports. Data on the seasonality of imports was also collected. Additionally in 2004 data was collected from direct sales operators. Data was not collected from retailers as sufficient data could be obtained from other companies.
- ii) Data on the land area used for growing organic vegetables was collected in each season □ from the Soil Association during the first two seasons and from DEFRA national statistics in the third season.
- iii) Data from i) and ii) were combined to indicated the annual supply in tonnage, value, land area and per cent self-sufficiency for 24 crops. Trends during the period of the study were identified. Ways of obtaining forward projections were partially explored, for example through seed providers and transplant raisers, but implementing it was beyond the scope of the project.
- iv) The data was interpreted, analysed and reported to growers, pre-packers, wholesalers, other marketers and policy makers through an annual report, the agricultural media, various presentations (including to the English Organic Action Plan Group) and a dedicated seminar in the final season of the project. Over three hundred copies of the report for 2004 were distributed between publication in March 2006 and the end of April 2006, similar numbers of reports were disseminated in previous seasons. Additional copies were downloaded from www.organicveg.org.uk.

METHODS AND APPROACHES

HDRA, the Soil Association, Elm Farm Research Centre (EFRC) and the Institute of Rural Sciences (IRS) at the University of Wales, Aberystwyth collaborated on the project. HDRA co-ordinated and undertook the data collection and analysis, and the report writing and dissemination. All partners assisted in design of the methods as well as reviewing data and reports and disseminating results. A one-day seminar was held at the end of February 2006 to further disseminate results and obtain stakeholder feedback. During this seminar delegates and stakeholders also detailed the need for future work as outlined in Appendix 6.

Figure 1: Points of data collection



SURVEY OF PRE-PACKERS AND WHOLESALERS

Data on specific quantities of organic vegetables marketed in the UK were collected from pre-packers and wholesalers, differentiating between UK produced and imported products and identifying the UK sourcing season. This information was collected via the data input forms in Appendices 1 and 2. Data input forms were modified slightly over the period of the study, with forms from the 2004 study shown in the appendices. Data input forms referred to the 12 months preceding the 31st March and were aimed to be collected by September each season, although received data was included up to the point of the report publication. In total 72 pre-packers and wholesaler organisations supplied information for the study. Follow up interviews were performed with a range of players in the market. Estimates were made for companies who did not supply data, based on data supplied in previous seasons, published figures and market intelligence.

DIRECT SALES OPERATOR SURVEY

During the 2004 season a pilot survey of direct sales operators was performed in response to reports of rapid growth in the sector but little supporting data. In previous seasons direct sales data was estimated.

In February 2005 a questionnaire was sent to 319 direct sales operators from the Soil Association's Organic Directory and other web-based sources. A 47 per cent response rate was achieved. The questionnaire (Appendix 3) aimed to collect data on the size, value and dynamics of the direct sales market, and supply the information to the sector. The questionnaire asked for details of turnover and sourcing with a crop category and outlet breakdown.

The survey sample was scaled-up assuming a total population estimate of 428 businesses, 72 per cent of which were farm-based. The total population estimate was calculated from the number of vegetable direct sales outlets in the Soil Association's Organic Directory and found on other web-based sources. The sample was believed, by expert knowledge, to be representative for all direct outlets and crop categories. Values obtained from the survey were converted into tonnage using average prices from direct sales schemes supplying data to the wider project.

DATA ON THE LAND AREA USED FOR GROWING ORGANIC VEGETABLES

In 2002 and 2003 the Soil Association supplied area data for broad crop categories, which was collected from SA Cert and other certifying bodies. In 2004 DEFRA supplied area data in slightly more detail. However as certifying bodies supply data to DEFRA at various levels of detail, it was necessary to collate figures into broad crop categories, such as brassicas or alliums. Additionally, marketed tonnes collected for this study and average marketable yields were used to calculate area figures for individual crops and to allow reconciliation between HDRA and DEFRA data.

All data were cross-referenced to other published sources of information, such as Organic Monitor, Taylor Nelson Sofres (TNS), Organic TS, Mintel, British Retail Consortium, DEFRA and the Soil Association. Final data were peer reviewed by key players in the organic vegetable industry.

STATISTICAL ANALYSIS

The full database containing data from pre-packers, wholesalers and the direct sales operator survey was analysed in each individual season through the use of basic statistics including averages and percentage increases. ANOVAs were used to analyse the three-year data set and to examine if variation between seasons was more than the variation within seasons/groupings and so identify if changes were significant at 5 per cent error level. A 95 per cent confidence interval and standard deviations were used to scale up the direct sales operator survey in respect to outlet types and crop categories to identifying if the sample was representative for the total, outlets and crop categories.

RELIABILITY OF THE RESULTS

The pre-packer and wholesaler survey was designed on a census system. Response rates varied from 73 per cent to 57 per cent per annum. The only incentive for companies to provide information was the value of the study results, which were supplied to them. Conversely the direct sales operator survey was performed on a sample basis.

Limitations of the study and their consequences are shown in Table 1.

Table 1: Limitations of the study and their consequences.

Limitation	Consequence
Pre-packer and wholesaler survey	
As the study progressed more organic vegetable businesses were included in the pre-packer and wholesaler survey.	For some crops, such as beans, figures in early seasons were underestimated due to fewer companies participating.
In each season a slightly different selection of pre-packers and wholesalers responded to the questionnaires.	Reduced validity of some information, such as price data. Conversely, accurate estimates could be made for companies who did not supply data every season.
Where information became available for previous seasons and suggested estimates were inaccurate then data was modified.	Some figures discussed in the final report differ to figures discussed in the annual reports.
One large organic pre-packer did not supply information for any season.	Estimates were made for the pre-packer.
Direct sales sector	
For 2002 and 2003 the direct sales sector was fully estimated.	The alteration in methodology by performing a survey in 2004 aimed to increase the reliability of the results. However any change in methodology limits comparability between seasons.
The survey sample was multiplied up to be	The direct sales sector is largely unrecorded with the

Limitation	Consequence
representative of the total population.	total population unknown; hence it was estimated. An error in this estimate would have a large impact on the total direct sales market figure.
Data Analysis	
In order to provide a summary of data, and identification of trends, the annual and final reports analyse data by crop categories and outlets.	Variations within the crop and outlet categories may be masked in annual reports
Data collected means crop variety is indistinguishable from crop type e.g. lettuce is one category and the amounts of little gem, iceberg etc are unknown.	Data is of insufficient detail for some specialised packers.
Annual reports published during the subsequent marketing season to which they refer.	Data is historical.

RESULTS OBTAINED

This section focuses on trends over the project period and includes data from project OF 0307 where relevant. Results for the 2004 season are detailed where the most up-to-date information is appropriate. Some figures in this final report are different to those published in the annual reports due to inconsistencies between recorded and published data.

Each season spans two calendar years (e.g. April 2004 to March 2005) however seasons are referred to by the first and predominate year of the season (for example the 2004-05 season is referred to as 2004).

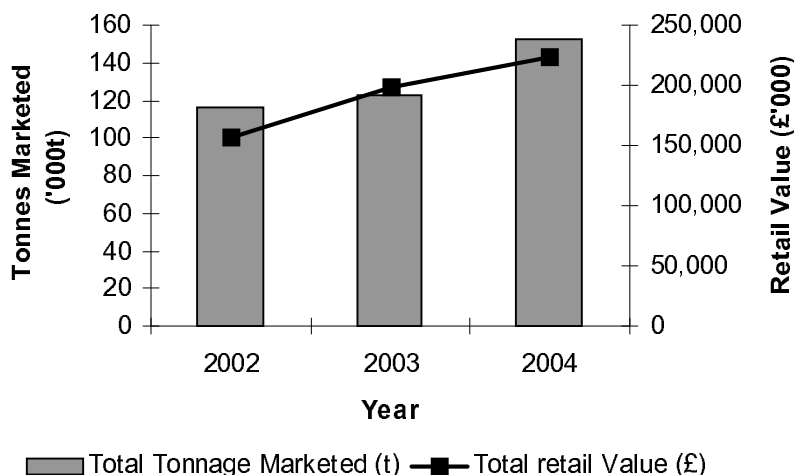
This study found a 31 per cent increase in total tonnage traded between the 2002 and 2004 seasons and a 42 per cent increase in retail value (Table 2). The estimated total retail value of the UK organic vegetable market in the 2004 season was £223M. This was comprised of 152,100 tonnes of fresh produce, of which 97,600t were sourced from the UK. Hence the UK was 64 per cent self-sufficient in organic vegetables, a rise from 61 per cent in 2002. The UK farm gate value of organic vegetables reached £52M in 2004; this was 23 per cent of the retail value of all organic vegetables. Despite relatively large increases in volumes traded between seasons, the increases were not found to be statistically significant on a crop level due to the high variation within seasons and crops. The differences between seasons were significant on an aggregated crop category level. Carrots in particular have experienced strong growth and increasing UK-grown share of the market over the study period.

Table 2: Summary of tonnage and value of the UK organic vegetable market

Season	Total Market (tonnes)	UK Produce (tonnes)	% UK Produce (tonnage)	UK Farm Gate Value (£M)	Total Market Wholesale Value	Total Market Retail Value (£M)
2002¹	116,126	70,581	61	41	126	157
% Increase (2001 - 2002)	15	20	5	10	13	10
2003¹	122,815	73,592	60	41	160	198
% Increase (2002 - 2003)	6	4	-2	2	26	26
2004	152,142	97,642	64	52	178	223
% Increase (2003 - 2004)	24	33	7	25	11	13
% Increase (2002 - 2004)	31	38	5	27	40	42

¹Data revised due to availability of additional information.

Figure 2: Size of the organic vegetable market in the UK (retail value and tonnes)



In 2004 organic vegetables (including potatoes) accounted for 1.23 per cent of the total vegetable and potato market (organic and conventional) of 12,311,000 tonnes. By value organic vegetables accounted for 3.16 per cent of the farm gate value of all home produced vegetables (£1.640bn) (DEFRA, 2004b).

ORGANIC HORTICULTURAL AREA AND PRODUCTIVITY

This section explores changes in UK organic vegetable cropping area and productivity.

The area of land used for the production of organic vegetables in the UK increased 24 per cent during the study period, from 5,132ha (2003) to 6,364ha (2005). In contrast there was a 5.5 per cent fall in total organic and in-conversion land from 726,400ha in 2003 to 686,101ha in 2005.

The overall total increase in organic horticultural area masked variations between crop categories as shown in Table 3. For example, the area of potatoes increased 8 per cent between 2003 and 2005 while root vegetables increased a higher 30 per cent over the same period.

Table 3: Hectares of organic land used to produce horticultural crop categories (2003-05)

Crop Category	Apr 2003	Apr 2004	Jan 2005 ¹	% change (April 2003 to Jan 2005)
Potatoes	1,860	1,689	2,011	8
Root vegetables	1,588	2,131	2,070	30
Green vegetables, salads and protected crops	1,598	2,050	1,945	22
Herbs	86	86	337	292
All Vegetables	5,132	5,956	6,363	24

(Soil Association and DEFRA, 2005)

¹Figures are not directly comparable as data for April 2003 and April 2004 was obtained from the Soil Association and figures for January 2005 were from DEFRA.

Levels of productivity can be calculated by dividing farm gate value (or tonnage) by the area grown, to obtain an indication of productivity (by value or weight) per unit area, each season.

Table 4 shows these values for the past three seasons. As area data is only available on a crop category basis it was not possible to calculate productivity on an individual crop basis hence productivity figures could be affected by alterations in the relative share of crops within the crop category.

Table 4: Comparison of calculated productivity between 2002 and 2004

Productivity by crop category (UK t/ha)	2002	2003	2004
Potatoes	14.0	14.0	16.4
Root vegetables	14.2	12.7	17.9
Green vegetables, salads, protected cropping and herbs	13.1	10.6	12.0
Average	13.7	12.3	15.3

Figures in Table 4 indicate productivity fluctuated over the period of the study reflecting the variability of seasons and organic vegetable growing. Figures for crop wholesale value per hectare fluctuated similarly. There was much variation between crops and outlets, hence the relative share of higher weight but lower value crops within each category and season can influence average figures and the figures above are only indications for the three seasons. Weather can have a vast impact on yields, for example 2003 had a warm and dry spring and summer, whereas 2004 had a much wetter summer than 2003. Rainfall can also have a knock on effect through impacting on establishment of winter green manure cover crops.

Mean price data also fluctuated over the period of the study with patterns varying for individual crops. Indications were that pre-packer sales prices per tonne increased between 2002 and 2004, although broccoli and cabbage were exceptions. However this does not reveal what has happened at the farm level. The pre-packer sales price increases could be influenced by particularly large increase for a few crops such as lettuce. Conversely courgettes showed a consistently declining price over the study period. Wholesale sales price appeared to be more volatile than pre-pack sales price. However pre-packer sales price was often higher than wholesale sales price with exceptions being cabbage and celery. The mean of UK prices for all seasons between 2001 and 2004 was lower than the mean of the combined UK and import prices with exceptions of cabbage, cucumber, sweet corn and tomatoes.

Generally technical agronomy problems were less of an issue in the final study year than compared to the first year of the study, although there are some exceptions. Economics concerns are now tending to guide growers' decisions since if a crop is not profitable then it is unlikely to be grown, for example leeks.

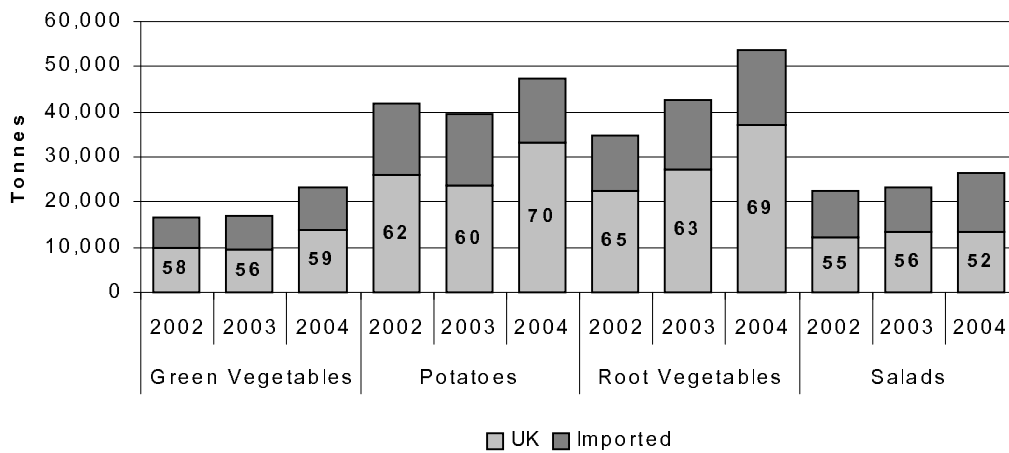
SOURCING

This section explores trends in organic vegetable sourcing and comparisons with the conventional vegetable sector.

The UK has historically been a net importer of organic vegetables. In 1997 anecdotal and unsupported reports estimated that 30 per cent of organic vegetables were home produced. In 2004, this project found the average UK self-sufficiency for all organic vegetables to be 64 per cent, or 97,600 tonnes sourced from the UK. Organic vegetables from the UK had an estimated farm gate value of £52M in 2004, this was 23 per cent of the total retail value of all organic vegetables, and had risen from £40.7M in 2002.

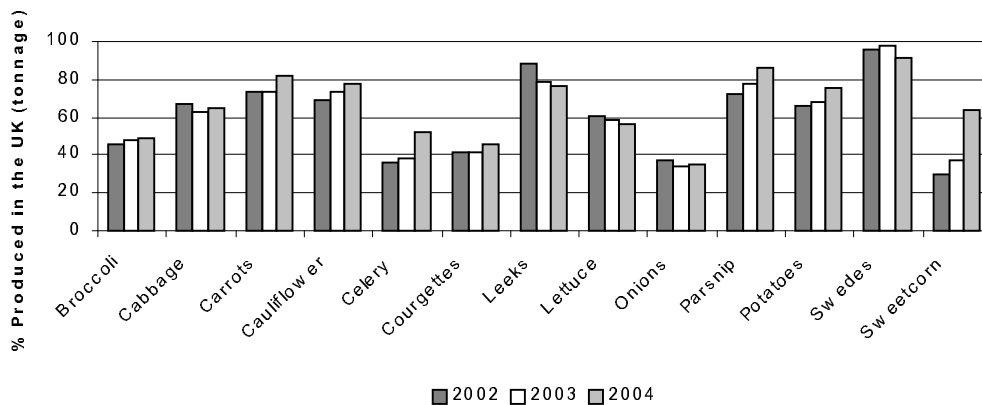
The percentage of total supply (tonnage) that was UK sourced for broad crop categories is illustrated in Figure 3. The proportion of sales that were UK sourced showed an increasing trend over the study period. However, there were large variations between different crops. For example root crops ranged from only 35 per cent of onions marketed being home produced to 92 per cent of swedes being UK grown in 2004.

Figure 3: UK supply and imports for different crop categories by tonnage (2002-04)



The percentage of total supply (tonnage) that was UK sourced for individual crops is illustrated in Figure 4. Generally UK sourcing gradually increased, with a few exceptions such as leeks, swedes and lettuce. Cauliflower self-sufficiency increased from 69 per cent (2002) to 77 per cent (2004) and also extended the main UK sourcing season from four months in 2001 to nine months in 2004, although weather can impact upon this. Likewise early/salad potatoes have begun to reach the market in June as opposed to July or August in 2001, again this depends on both crop management and the individual growing season. The increasing parsnip trend is partially due to the availability of small sweeter parsnips from July onwards. For some crops there is substantial latent demand, for broccoli this has been estimated at 11 per cent. For some crops there are issues that limit UK supply. For example maintaining a bright skin finish during long storage of carrots and the lack of organic seed for some crops. The impact of seed regulations was much less than predicted due to the use of hot water treatments and greater seed hygiene, such as for celery. There are also technical issues with the growing of some crops in the UK, for example onions, which enables overseas growers to have a comparative advantage, particularly on cost competitiveness. However there was insufficient data to identify if these trends would continue. Appendix 4 shows the monthly breakdown of when imports were traded for 22 individual crops in 2004.

Figure 4: Percentages sourced from the UK for selected crops from 2002 to 2004 (by tonnage)

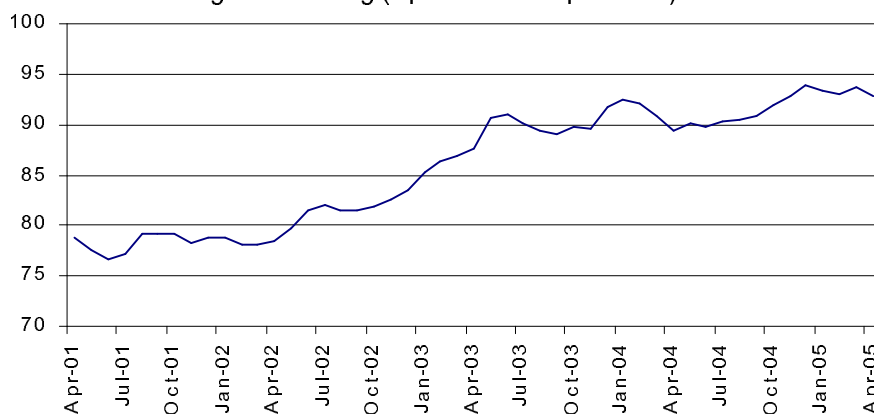


Exchange rates

The exchange rate affects the relative cost of buying vegetables abroad and so also impacts upon UK market share. Figure 5 shows fluctuations in the index rate of the euro from April 2001 to 2005. The euro has continued

to strengthen over the period of the study, relative to the pound, hence imports have become relatively more expensive, a further incentive for increased UK sourcing.

Figure 5: The euro index rate against sterling (April 2001 to April 2005)



(Source: Bank of England, 2005)

Organic import substitution compared to conventional sourcing

DEFRA statistics show that in tonnage terms, the UK share of the total (conventional and organic) food market varies annually. However the long-term trend shows a decline as the 1993 \square 95 average was 73.7 per cent, but in 2004 self-sufficiency average was 63.4 per cent. Indigenous food shows the same long-term trend to all food products. The decline in UK sourcing was greater when vegetables were separated from total food calculations. However, during the same period, self-sufficiency for organic vegetables increased slightly. In 2004, self-sufficiency for organic and conventional vegetables was similar at around 60 per cent, whereas organic potato self-sufficiency was low relative to conventional potatoes. Selected data on the supply of fresh vegetables and potatoes from DEFRA's *Agriculture in the United Kingdom* (2004) are shown in Table 5, and contrast with data from the organic sector and this study.

Table 5: Conventional and organic vegetable supply & production statistics (Thousand tonnes unless otherwise specified)

Year	Organic (by financial year)			Conventional (by calendar year)		
	2002	2003	2004	2002	2003	2004
Total supply	116.1	122.8	152.1	12,551	11,323	12,311
Of which: vegetables	74.3	83.5	104.8	4,217	4,110	4,495
potatoes	41.8	39.3	47.3	8,334	7,213	7,816
Total UK supply	70.6	73.6	97.6	9,548	8,465	8,972
Of which: vegetables	44.6	49.9	64.6	2,582	2,547	2,656
potatoes	26.0	23.7	33.0	6,966	5,918	6,316
Total % self-sufficiency	61%	60%	64%	76.1%	74.7%	72.8%
Of which: vegetables	60.0%	59.8%	61.6%	61.2%	62.0%	59.0%
potatoes	62.2%	60.2%	69.9%	83.6%	82.0%	81.8%

(Source: Study OF 0342 data and DEFRA, 2004)

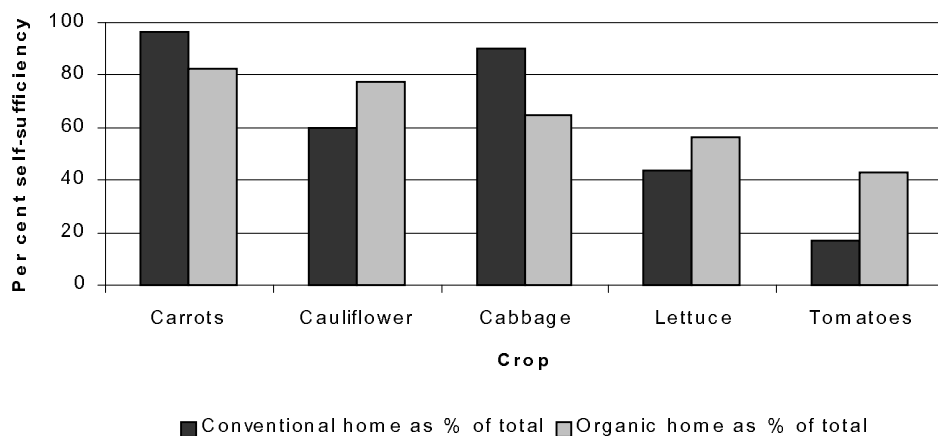
However, the specific situation varies on an individual crop basis (Figure 6). Carrot and cabbage UK organic sourcing had not reached conventional levels, so perhaps improvements could be made. In contrast, organic lettuce, cauliflower and tomatoes exceeded the level of UK sourcing of their conventional counterparts in 2004.

DEFRA project OF 0349 identified that differences in standards or certification systems can enable some other European countries to produce organic vegetables to the specifications demanded more easily than in the UK; for example high reliance on imported fertility for potatoes. Additional contributing conditions to the level of imports in the UK included:

- ▶ An expanding UK market and insufficient supply to meet demand for some products at the type and price required;
- ▶ Exports encouraged by some other European countries;
- ▶ Disconnection between UK production patterns and consumer buying patterns, especially regarding seasonality and rotation balance, and no export market to mitigate effects;
- ▶ Some UK produce not of high enough quality to store (e.g. new potatoes).

Hence it may not be realistic to expect the same level of self-sufficiency for all organic and conventional crops. Imports can also sustain the UK market when UK products are not available.

Figure 6: Organic & conventional self-sufficiency for selected crops by tonnage (2004)

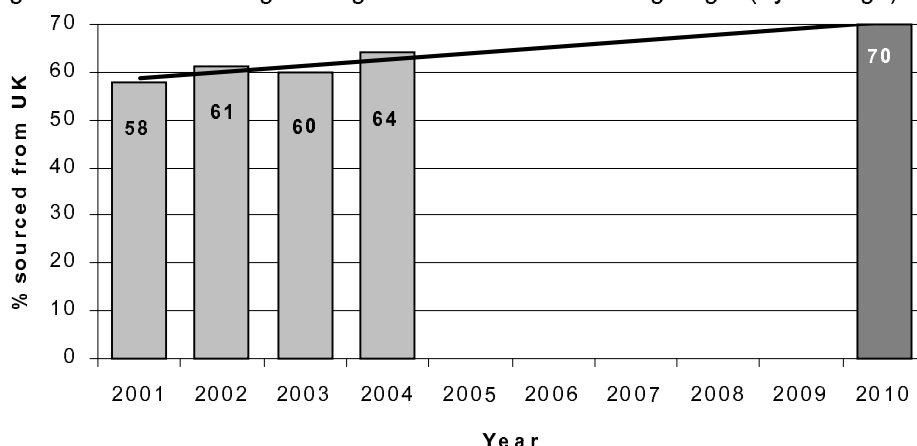


Policy impacts

Policy can impact upon the level of UK sourcing. Each country in the UK has an Organic Action Plan (OAP) that outlines targets for self-sufficiency for all organic food.

UK average self-sufficiency in organic vegetables has shown a gradual increase over the period of the study and was moving toward the English OAP (DEFRA, 2002) target of at least 70 per cent of indigenous organic produce to be UK sourced by 2010. Figure 7 illustrates the progress that has been made and the rate of increase in UK sourcing that will be necessary to meet the English Organic Action Plan target.

Figure 7: Progress towards the English Organic Action Plan sourcing target (by tonnage).



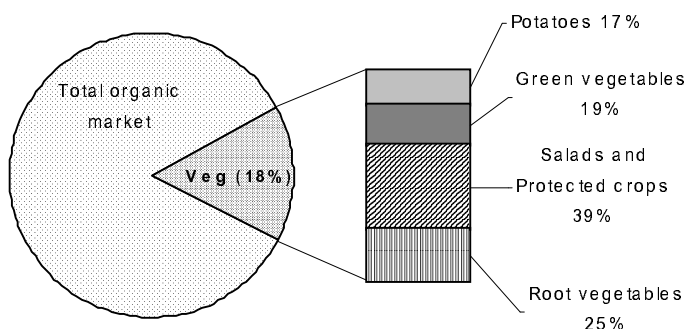
In light of the forecasted growth in the organic vegetable market and observed fall in in-conversion land area it is possible that if further land area is not converted to organic vegetable production then there could be increased reliance on imports. Hence UK self-sufficiency could change correspondingly.

STRUCTURE OF THE ORGANIC VEGETABLE SECTOR

This section illustrates the structure of the UK organic vegetable market.

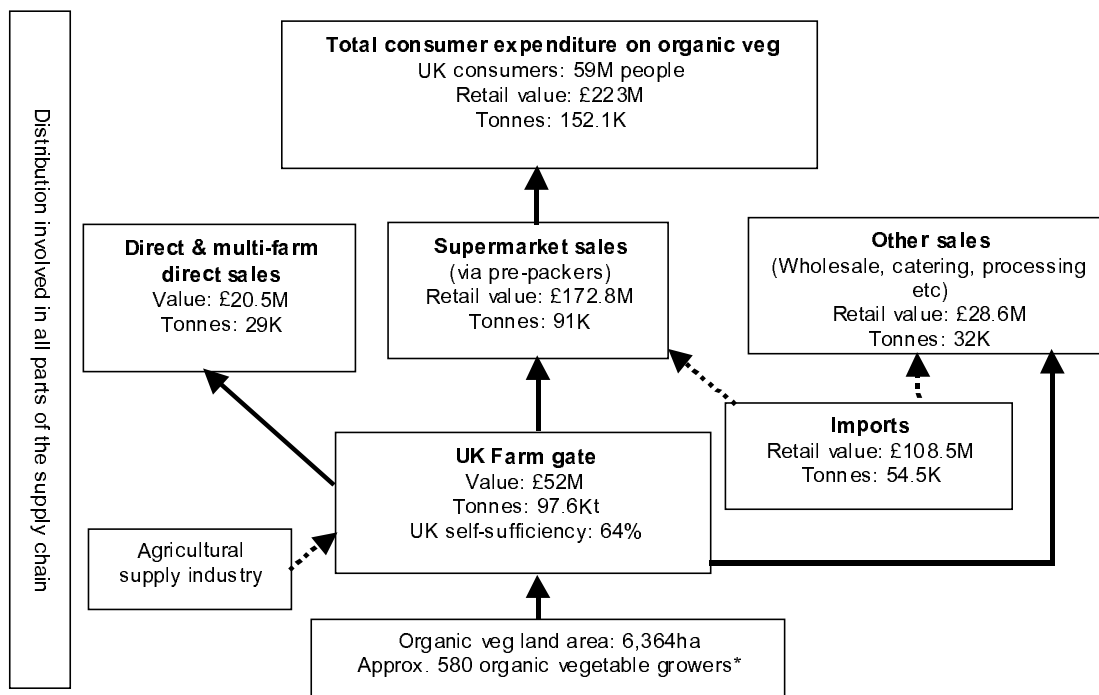
The structure of the UK organic vegetable market and the share it held within the wider organic market is illustrated in Figure 8; it remained fairly stable over the course of the study. Vegetables accounted for 18.4 per cent (by value in 2004) of the total UK organic market. The most valuable category was salads and protected crops, followed by root vegetables, green vegetables and then potatoes.

Figure 8: Structure of the organic market in 2004 (by value)



Tonnage and value flows can be tracked through the broad food supply chain as shown in Figure 9.

Figure 9: Simplified UK organic vegetable market diagram (2004).



* Number of organic growers based on Soil Association certified vegetable growers and their share of the total UK certified and in-conversion farmers

The organic vegetable market developed within the wider agricultural and food retailing environment. This can cause organic and conventional crops to follow similar consumption trends, for example the falling demand for both organic and conventional swedes. Particular market events during the study period included:

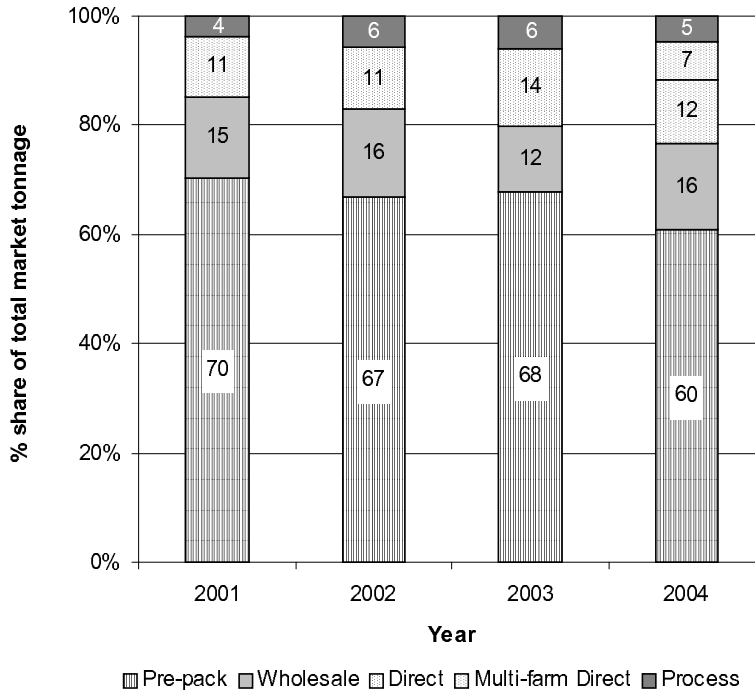
- ▶ Supermarkets competing on lowest price;
- ▶ Increased publicity about local and organic food for school meals;
- ▶ Increased publicity from large organic box schemes and increased interest from consumers and growers in local and direct sales;
- ▶ Policy such as Organic Action Plan Two Years on and CAP reform uncertainty and introduction;
- ▶ Onset of escalating fuel costs;
- ▶ Positive and negative press coverage, and reports of the term organic being abused;
- ▶ Food scares e.g. the Sudan 1 scare in February 2005.

MARKET CHANNELS

This section examines the changes in each of the main market outlets for organic vegetables.

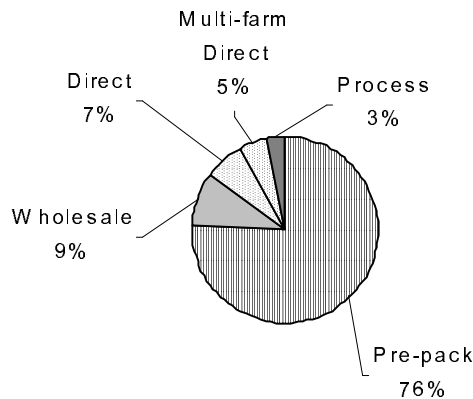
The relative share of each market outlet has shown some annual variation. Supermarkets dominated UK organic vegetable sales and so pre-packers were the major route to market. By tonnage they accounted for 60 per cent of organic vegetables traded in 2004 (Figure 9) although this fell from 67 per cent in 2002. However, direct sales (including multi-farm direct) showed an increase in relative share of the UK organic vegetable market to 19 per cent in 2004.

Figure 10: Percentage of total tonnage to different market outlets (2001-04)



When calculated by value the picture is slightly different. In 2004 pre-packers accounted for 76 per cent of the total market value and direct sales accounted for 12 per cent (Figure 10).

Figure 11: Market outlet share by value (2004)

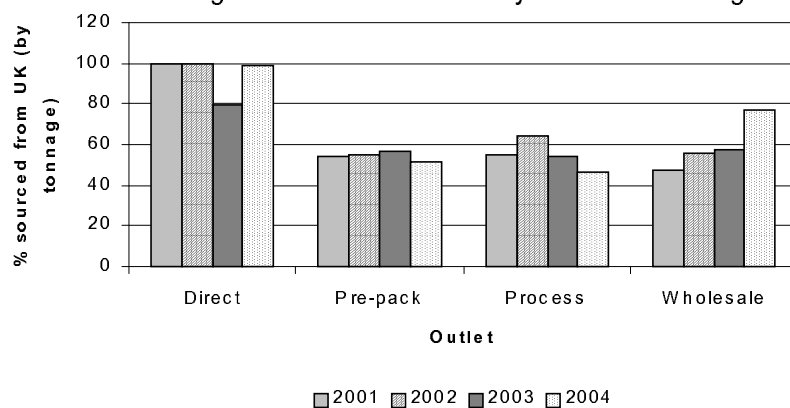


Pre-packers and wholesalers interviewed, and qualitative information provided, indicated that downward price pressures were a key constraint in the organic vegetable market throughout the majority of the study period, especially in the supermarket supply chain. Other recurring constraints included weather conditions.

The survey of direct sales operators conducted in 2004 highlighted the variation and complexity of the direct sales sector. Direct sales were defined as those that pass directly from farmer to consumer, so only included produce that was produced and sold from the same farm. Trade including other UK farms (for example for buying in extra vegetables out of season) was calculated separately to give a clearer picture of the market and termed 'multi-farm direct' in the 2004 season. In previous seasons multi-farm direct sales were included as direct sales. Due to the new method of calculating direct sales, figures from 2004 are not directly comparable to previous seasons.

Each route to market has a different sourcing strategy in order to meet customer requirements. Direct marketing achieves the highest proportion of UK sourcing of all market outlets. Figure 11 illustrates the situation for 2004. The dip in direct sales sourced from the UK in 2003 is due to awareness and inclusion of multi-farm direct sales.

Figure 12: Per cent of tonnage sourced from the UK by various marketing outlets (2001-04)



Pre-pack

Pre-packers mainly supplied supermarkets, which remained the major market outlet for organic vegetables. Due to the large market share, the supermarket and pre-packing outlet has the ability to drive the market and set some standards. In 2004 the wholesale value of organic vegetables through this channel was £135M (an increase of 45 per cent when compared to 2002); this was comprised of 92,000 tonnes (a 19 per cent increase over the study period); of this 51 per cent was sourced from the UK. However, in the 2004 season the pre-packers share of total market tonnage fell to 60 per cent continuing a slight downward trend over the study period and illustrating less rapid growth than some other outlets.

In 2004 pre-packers reported the key constraint to increasing UK market share to be availability, although continuity and quality were also important. Pre-packers thought there was potential to increase UK supply by another 26 per cent even though the total market may only grow by 14 per cent in the next season. Several pre-packers increased customer numbers and moved towards supplying a proportion of produce to box schemes in 2004. The key market issue and threat reported by pre-packers was downward price trends which somewhat originate from competition between supermarkets.

Over the study period the agricultural press reported issues affecting organic vegetable pre-packers including:

- 1) A reorganisation in the competitive position of the supermarket sector. Morrisons acquired Safeway, Waitrose added about 60 stores, Sainsbury's refurbished and expanded, Tesco expanded to nearly 1,800 stores including 100 Tesco Extra Hypermarkets (Huggins, 2005);
- 2) Following Sainsbury's organic promotion featuring Jamie Oliver organic sales for the month of April 2005 hit a reported all-time-high; this also helped other supermarkets to secure their consumer-base (Twynning, 2005);
- 3) Organic Farm Foods launched a 'Local Hero' brand for local organic seasonal lines in January 2005 under their Local Farm Series banner. The source farms were identified by paintings on the pack depicting the farm.

Wholesale

Wholesalers generally supplied independent retailers, box schemes, food service and public procurement, but some also operated their own outlets, such as box schemes. The wholesaler share of the organic vegetable market fluctuated slightly over the study period. They accounted for 16 per cent of the market with a wholesale value of £16.4M and 24,200 tonnes in 2004 (a 30 per cent increase over the study period) and sourced 77 per cent of this tonnage from UK growers.

Wholesalers reported that UK supply had the potential to increase about 18 per cent but, as for pre-packers, availability was the most important constraint. The key market issues were undersupply/availability and weather. Whereas the main threat to the sector was reported as competition from imports. Within wholesale supply chains there were reports of imported produce accurately meeting the price, presentation and organisational standards required whereas UK produce showed a weakness.

Direct and Multi-farm direct sales

Direct outlets, usually farmers' markets, box schemes or farm shops, enable farmers to market crops straight to the consumer. As part of this study the direct sales operator survey in 2004 identified grey areas and limitations to the typical definition of direct sales, including trade between farms when direct sales operators supplement what they produce on the farm with produce brought in from other farms or wholesalers. This has been termed multi-farm direct for the purpose of this study.

Direct sales market share increased over the three seasons to reach a share of 19 per cent of the UK organic vegetable market. Box schemes in particular have seen high growth rates; this was partially due to a few schemes becoming very large but there was also an increase in the total number of box schemes and the size of

many schemes. Likewise the organic produce sold at farmers' markets increased about 21 per cent (Soil Association, 2005).

Several large box schemes have developed highly professionalized and centralised models that include franchising and employing advanced marketing techniques. These large-scale operations have received criticism from other, often smaller, box schemes for working on a centralised and national, not local, scale and for competing against smaller schemes. Yet small box schemes can benefit from the wider publicity employed by larger scale schemes.

In the 2004 season, about 28,900 tonnes of organic vegetables were sold through direct outlets (including multi-farm direct), a 118 per cent increase over the study period. Produce sold through direct and the multi-farm direct sales had an estimated wholesale value of £20.5M and 98 per cent was sourced from UK producers in 2004.

Processing

Although the share of organic vegetables for processing was small in the UK, at 5 per cent of total market tonnage, it remained fairly stable over the period of this study. Processing accounted for about 7,000 tonnes of organic vegetables (an 8 per cent increase over the study period) with a wholesale value of £5.8M in 2004. During 2004 there was a 4.5 per cent increase in the number of licensed organic processors (of all food products) to 2,028 in December 2004 continuing the steady increase of the past three years (Soil Association, 2005). Some pre-packers have developed processing facilities for convenience products, for example for carrot batons.

Foodservice

Foodservice is the term used to describe the provision of meals out of the home; it was also known as the catering sector. Foodservice tended to be divided into two broad categories: the profit sector (restaurants, pubs, hotel and leisure) and the cost sector (staff catering, education, healthcare, custodial, MoD and welfare e.g. homes for the elderly). Foodservice was not measured in this study.

There has been increased interest in the potential of local, seasonal and/or organic food to access the foodservice market over the three seasons of the study. At the end of 2004 there were 34 certified organic caterers, however catering is outside the jurisdiction of organic regulations so there is no legal requirement for restaurants and other foodservice operations to be certified (Soil Association, 2005).

Although there is scope to specify seasonality or freshness of food in catering contracts, to enable small and local suppliers to meet foodservice demands, there are also considerable barriers to be overcome; for example the lack of cooking facilities in school kitchens and very low budgets for public, or cost, catering. Two new European Directives, which came into force in the UK in January 2006, offer important opportunities to introduce social, employment and environmental initiatives into public sector contracts. This may assist alterations in foodservice procurement in coming years.

A few pilot schemes have begun to develop supply programmes and improve co-operation among farmers, growers, wholesalers and other suppliers to meet public food procurement requirements. As part of the London Food Link Hospital Food Project, an initiative led by Sustain, the alliance for sustainable food and farming, it was intended that four London hospitals increased the amount of local and/or organic food to 10 per cent of their routine catering provision. If this also occurred in the Ministry of Defence, where food supplied was valued at £120M per annum, then £12M could be spent on local or organic food.

DISCUSSION AND IMPLICATIONS

This study determined the size and value of the UK market for a range of organic vegetables and identified trends for three seasons.

Over the three seasons of the study (2002 to 2004) the retail value of the UK organic vegetable market grew by about 42 per cent, there were slightly smaller increases in total tonnage traded and in farm gate value (31 and 27 per cent respectively). UK producers captured a larger share of the market with UK tonnes traded increasing 38 per cent. Hence UK self-sufficiency increased to 64 per cent in 2004. Additionally growth in the UK organic vegetable market exceeded the average growth of both the organic food market and the conventional vegetable market.

Average productivity fluctuated over the period of the study. Indicating the variability of seasons and organic vegetable growing. Additionally the relative share of higher weight but lower value crops within each category and season can influence average productivity figures

Key themes within the study of price, product availability and continuity and market diversification are further discussed below.

PRICE

The growth of the organic vegetable market brings new opportunities but there are also different pressures, such as on prices. Although price pressures are part of the competitive process and can create new opportunities they were reported to be a key constraint to the viability and integrity of organic vegetable production. Organic farming systems were particularly sensitive to price pressures due to lower yields than conventional systems and the need to balance the economics of the whole rotation; including less financially profitable fertility-building phases. Moreover competition from conventionally produced vegetables had risen due to techniques becoming more environmentally friendly, and some products being environmentally labelled.

As the simplified UK organic vegetable network (Figure 4) illustrated tonnage and value flows can be tracked through the food supply chain. The majority of the value and tonnage of organic vegetables were sold through supermarkets, via pre-packers. However, this route was reported to have the most severe downward price pressures, originating from competition between supermarkets. Price pressures were intensified when combined with high specifications, sometimes reported to be unrealistic, ever more demanding customers and price promotions. However the pre-pack route also showed signs of its relative market share declining, which could be a response to dissatisfaction, high specifications and low financial returns obtained by pre-packers and growers in this channel. Furthermore several pre-packers and wholesalers have begun to diversify their customer base and reduced their reliance on supermarket customers.

In addition imports from countries where organic standards were reported to be less robust, or less well enforced, and labour was cheaper, were stated as an important market issue, which put pressure on prices. However the strengthening euro relative to sterling made imports relatively more expensive. HDRA's Supermarket Watch (Geen, 2005) found that retailers sold UK vegetables more expensively than imported vegetables for some crops and months.

Data indicated that prices fluctuated over the study period with patterns varying for individual crops. Some crops, such as lettuce showed a steady price increase where as others, such as courgettes, showed a price decline. Although the mean price pre-packers sold organic vegetables for increased between 2002 and 2004. In many cases data indicated that mean UK prices were lower than mean imported prices. However this does not reveal what is happening at the farm gate level.

Expansion in direct sales could be one impact of downward price pressures with growers attempting to become price setters (as opposed to price takers) and gaining more control of prices. This could partially be due to prices for produce through some outlets being too low for a return on investment. The lack of accessible and free price information (as is available in the conventional vegetable sector) may also hinder some producers from gaining more control of prices in some outlets. Additionally the increase in direct sales has been both consumer and farmer driven.

If downward price pressures continue it is likely growers, pre-packers and wholesales will continue to explore alternative outlets, diversifications and cooperation in order to add value and maintain profitability. This could also lead to an ongoing reduction in the supermarket share of the organic vegetable market. Moreover, if growing organic vegetables becomes less economically viable then existing growers may cease growing organic vegetables and new growers may not enter the sector. This could limit the availability of organic vegetables.

[Chris to insert link to economics study results]

UK PRODUCE AVAILABILITY

Self-sufficiency in organic vegetables has risen over the duration of the study. Self-sufficiency in conventional vegetables declined during the same period.

Continued growth in the sector has put pressure on the availability of high quality organic vegetables in some market channels. Pre-packers and wholesalers reported that this could constrain the sector in the future. This was reflected in pre-packers and wholesalers' predictions that there was potential to increase UK supply by more than total market supply (14 and 26 per cent respectively). This suggested that UK supply was limiting the availability of UK organic vegetables, rather than supermarket preferences, as was sometimes speculated. HDRA's Supermarket Watch found that the majority of organic vegetables were UK sourced during the UK growing season. However there did appear to be scope to increase UK sourcing for some crops and in some months.

The area of land growing organic vegetables increased 24 per cent when compared with 2002; yet areas in conversion to organic production have fallen. This may be linked to the high 'costs of conversion' as discussed in *The UK Organic Vegetable Market 2003-04* (Firth *et al*, 2005). Stakeholders interviewed as part of this study predicted a shortage of suitable, converted, organic vegetable land, which might constrain the sector in the future and means conversion rates to organic vegetable production need to be a future priority. If the area of land growing organic vegetables does not increase sufficiently to meet the increase in demand there could be an

increased reliance on imports. Thus UK self-sufficiency could stagnate or fall and not meet the English OAP target of 70 per cent of organic products to be home produced by 2010.

During the first Organic Vegetable Market Study (2001) continuity and quality of UK organic vegetables was a key issue. The technical issues relating to continuity and quality have large been overcome or tolerated. However the current issue relates to meeting demands of the expanding market with a lower expansion in the area of land for organic vegetable production.

DIRECT SALES AND MARKET DIVERSIFICATION

Direct sales have increased rapidly and are becoming increasingly complex with direct sales operators sourcing produce from a variety of sources and pre-packers beginning to supply outlets other than supermarkets.

There has been a relative increase in direct and multi-farm direct sales in comparison with a relative decline in pre-pack sales. The pilot survey of direct sales operators, carried out as part of this study, indicated that direct sales increased about 30 per cent in the 2004 season and that this rate of growth was expected to continue into 2005 and 2006. Substantial growth from a few large box schemes has driven the increase in direct sales of organic vegetables, and the rise in farm gate value, although there was growth in schemes of all sizes.

Additionally several pre-packers reported they were supplying less to supermarkets and more to alternative outlets and a number of wholesalers reported less reliance on supermarkets. This combined with growers exploring outlets other than pre-packers, in order to address price and specification pressures, has stimulated publicity and supply to direct and multi-farm direct sales. Consumers appear to be becoming more aware of alternative outlets to supermarkets suggesting that both growers and consumers were beginning to trade organic vegetables away from supermarkets. HDRA's Supermarket Watch illustrated that a key concern about organic vegetables for committed organic consumers was the lack of UK or local produce. They reported they would buy more organic produce if there were more organic and local vegetables available. These are issues that could be addressed by buying through direct sales outlets. However, whether this attitude would result in long-term changes in shopping behaviour was not clear.

There have been suggestions that the organic vegetable sector could split into two:

- ▶ Organic vegetables produced for the multiples and;
- ▶ Locally produced vegetables for box schemes, farmers' markets, independent retailers etc.

The effects of each route on the rural locality are diverse. However some of the issues driving demand for local food, such as reconnection of consumers with producers, food miles, fair trade and price pressures are common to organic and non-organic foods, which are locally produced, thus increasing competition.

Within the sector there has been much debate on how large box schemes, where a high proportion of growth in direct sales was coming from, affected existing smaller or more local schemes. Research has shown that large box schemes can increase the publicity about box schemes in general and while customers may initially join a large scheme some may then go on to support a smaller or more local scheme.

When looking to the future, existing operators predicted growth in direct sales of organic vegetables to continue in to 2005 and 2006. Additionally, escalating fuels costs could challenge marketing routes that involve substantial travel by road. However many vans doing short journeys are not automatically more fuel efficient than one full, large HGV doing a longer journey from a distribution centre to a supermarket.

During the period of this study there has been much interest in improving the quality and quantity of UK sourced food served through public sector catering and foodservice. Clearly organic vegetables have a role to play. This remains a relatively specialist and small outlet, which is currently in its infancy and requires further and continued policy and infrastructure support and developments. However there have been considerable improvements in both financial assistance to schools and in information transfer.

The factors above combine to make market structures more complex and increase the need for further clarity and understanding of organic vegetable market structures. Additionally large box schemes have contributed to growth of the market by raising awareness, and this shows potential for other un-reached areas.

The implications of increased direct sales include, weakening the supermarket position, more opportunities for farmers to sell class II produce and re-engaging with consumers.

SUMMARY OF THE MAIN IMPLICATIONS OF THE FINDINGS

Growth in the organic vegetable market in the UK appears set to continue but there could be a shortfall in land in-conversion that needs to be addressed if UK self-sufficiency is not to decline. Price pressures are also threatening the viability of organic vegetable production. If this is not addressed it is likely UK production will

decline and there will be few new entrants to the sector. Additionally increase in the direct sales sector is predicted to continue at a higher rate than growth in the pre-packing sector.

The sector is still small and vulnerable to fluctuations in supply and demand so timely and reliable marketing intelligence is important for balanced growth in the organic vegetable market.

FUTURE ISSUES

Looking to the future, in the short-term, produce availability and poor continuity of supply were thought to be the greatest constraint to the sector. Yet, in the longer-term a shortage of suitable vegetable land was predicted to constrain the sector.

On average pre-packers and wholesalers expected the organic vegetable market to grow about 14 per cent in the 2005-06 season. Yet they thought there was potential to increase UK supply further at about 26 per cent resulting in higher UK growth and share of the total market. Therefore, in future seasons, there could be increased opportunities for UK organic vegetable growers. However due to a declining amount of land in-conversion to organic production there could be a shortage of UK produce to meet the rising demand, and so an increased reliance on imports, with a corresponding fall in UK self-sufficiency. The main threat to the organic vegetable sector was seen to be low prices devaluing organic produce and making production uneconomical, especially when considering the whole rotation. There have been new opportunities in the market and some pre-packers and wholesalers diversified their customer base, particularly during the 2004 season.

RECOMMENDATIONS

Provision of more timely information, including area data, prices, production costs and consumer trends, covering a wide variety of market sectors and levels and collated in one place has been demanded from the organic vegetable sector.

There is a need to address the ongoing downward price pressure in the organic vegetable market and the forecasted shortage of supply to prevent the UK share of the organic vegetable market from falling and to enable English Organic Action Plan targets to be met. This could be achieved by addressing deficiencies in understanding in the areas of market information, price and costs of supply, food supply chain and some wider issues. It is recommended that strategic actors, researchers, growers and advisors work together to achieve improvements in the following areas.

MARKET INFORMATION

- ▶ Continued collection and knowledge exchange of independent market intelligence, to enable the sector to respond in time to changes in supply and demand of different crops and outlets;
- ▶ Collection and knowledge exchange of marketing strategies including new and emerging markets such as direct and local sales, catering and public procurement. Development of supply and infrastructure to meet the demands of these new markets;
- ▶ Further research to improve understanding of the complexity of organic vegetable food supply chains, particularly the direct and multi-farm direct sector. It is recommended that this include identification of drivers and constraints, and development of appropriate and standardised definitions for quantifying and reporting market information.

PRICE AND COSTS OF PRODUCTION

- ▶ Regular, timely and published price collection at all levels in the food supply chain, particularly the farm gate level; to provide transparency, and thus opportunities to address downward price pressures and for growers to assert more control over price making;
- ▶ Further research and knowledge transfer into the costs of production and financial benchmarking. This would enable:
 - Growers to take a more active role in setting prices;
 - Comparisons between conventional and organic production costs;
 - Comparisons between UK and competitors production costs;

FOOD SUPPLY CHAIN

- ▶ Identification of sustainable organic food supply chains across the board (not just pre-pack chains), and good practices within the chain, such as co-operation, and ascertain if they are applicable to other chains, and can maintain or improve the sustainability of UK production;
- ▶ Continued dissemination and exploration of techniques such as benchmarking, Value Chain Analysis and the use of supermarket loyalty card data for the benefit of the whole sector through identification of potential cost saving in the food supply chain and accurately meeting consumer demand;
- ▶ Development and emphasis of the importance of ethical, trusting and long-term relationships throughout the supply chain through enforcing the Supermarket Code of Practice.

WIDER ISSUES

- ▶ Compete on bases other than price and find alternative methods of gaining market share;
- ▶ Further research determining health, social and environmental impacts of organic and local food systems, such as food miles and carbon footprints;
- ▶ Research to explore the wider implications of a 'split-sector' (pp17);
- ▶ Research to cover other technical issues of organic marketing such as the potential for use of recyclable and/or biodegradable packaging.

ACTION RESULTING FROM THE RESEARCH (E.G. KNOWLEDGE TRANSFER)

Three annual reports have been published and disseminated to the sector through sending copies of the report to relevant business and stakeholders. Details of results and report availability have been well covered in the trade press and on the www.organicveg.org.uk website. Additionally knowledge transfer of results and wider issues was performed through the 'Fresh Thinking in the Organic Vegetable Market' seminar (28th February 2006), which was attended by over 80 delegates from a range of businesses and market sectors. Further knowledge transfer was enabled through people involved in the project attending and/or speaking at other conferences (including two internationally) and events. Results of the project have formed the vegetable section of the annual Soil Association Organic Food and Farming report in every year of the project.

The direct sales operator survey was an additional survey within this project that has been disseminated with the project and increased knowledge about the direct sales sector.

The Supermarket Watch survey with HDRA members stimulated further interest in the organic vegetable market among HDRA members who are organic consumers and provided further information to support the study, although it was not part of the study.

References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.

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<http://organicgardening.org.uk/organicveg/economics/marketing/index.php?id=0>

Various coverage in the agricultural, food and general media

Range of presentations at organic seminars, conferences and open days.