The development of the organic vegetable market and supply in the UK

Chris Firth and Ulrich Schmutz[1]

The vegetable market is one of the largest sectors within the UK organic food market. This market has grown by 30% p.a. over the last 5 years, although it is now slowing down to a rate of 10-15% p.a. The production of UK organic vegetables increased rapidly from 1999 -2001, as growers responded to economic and policy incentives, and now the UK is 57% self sufficient in organic vegetables. Many new UK farmers have converted to organic production, although this process has involved high costs, largely due to having to take land out of production in the conversion period. However, once converted, farmers have in many cases, experienced overall financial returns that have been comparable or higher than conventional returns, although these good returns are highly dependent on high prices for organic vegetables. In comparison with conventional systems costs of organic vegetable production can be high, especially for organic seeds and for increased casual labour required for hand weeding. The resulting larger workforce, often required for organic vegetable production, can pose new management challenges. In the future, market growth and the numbers of farmers converting, will be slower and any market growth will depend on broadening the customer base, expanding different market channels and increasing home production especially at the beginning and the end of the season, thus enabling a substitution of imports.

1 Introduction

Vegetable production can be a major source of farm revenues in organic production systems. However, research efforts in organic agriculture are often focused on livestock and arable production. In those production systems subsidies are an integral part of the production economics. This paper examines a sector of the organic industry where subsidies are less important and market forces are the main drivers of development. How did organic vegetable supply respond to an increased demand for organic vegetables in the UK? What are the drivers and constraints to increased UK domestic supply of organic vegetables? How is the supply influenced by the economics of conversion and the economics of continued organic production? This paper attempts to answer these questions and provides an outlook into future developments.

[1] *HDRA Henry Organic Horticultural Programme, Ryton Organic Gardens, Coventry CV83LG, UK*
CFirth@HDRA.org.uk , USchmutz@HDRA.org.uk,
Tel.: +44 (0) 24 7630 8212, Fax: +44 (0) 24 7663 9229

2 Methods

Results from two DEFRA funded studies have been used to compile this paper. Firstly, a study of the 'Organic vegetable market' for the 2001/02 season (OF0307) has been used to obtain a clearer picture of the market situation. For this study data on volumes and values of crops traded, was collected from organic packers and wholesalers during 2002.

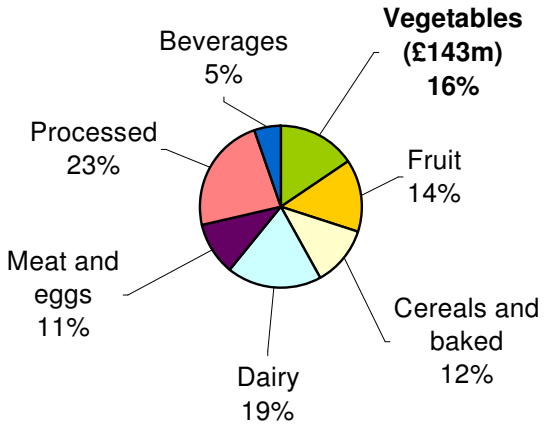
The second study was 'Conversion to organic field vegetable production' (OF0126T and OF0191) a project, which began in 1996 and will be completed in 2004. During this period it has monitored and evaluated the agronomic and economic performance of 11 farms, which have converted to organic field vegetable production. These farms represent a cross section of farms that have converted to organic vegetable production including vegetables. The sample includes larger arable farms, more intensive vegetable farms and mixed farms, which include livestock. For the economic assessment, data has been collected from each farm for the year prior to conversion, during conversion and through the first organic vegetable rotation. Data was collected according to Farm Business Survey (FBS) standards and has resulted in the calculation of output, costs, and net farm income on a whole farm basis and gross and net margins for each organic vegetable crop. Individual farm's financial results have been compared with other farms in the sample and with conventional FBS data for each farm.

3 The market for organic vegetables in the UK

3.1 Market size

The organic vegetable market has in the past been the largest sector within the UK organic food market, with a share estimated to be as high as 48% in 1990 (Mintel, 1991). However, its relative share has declined in the past decade due to the widening range of availability of other organic food types and by the organic consumer expanding their range of organic purchases. A recent study (Firth *et al.*, 2003) estimated the value of the organic vegetable market at £143m, 16% of the total retail value of the organic food market valued at £920m (Soil Association, 2002).

Figure 1: The size of vegetables within the overall UK organic market



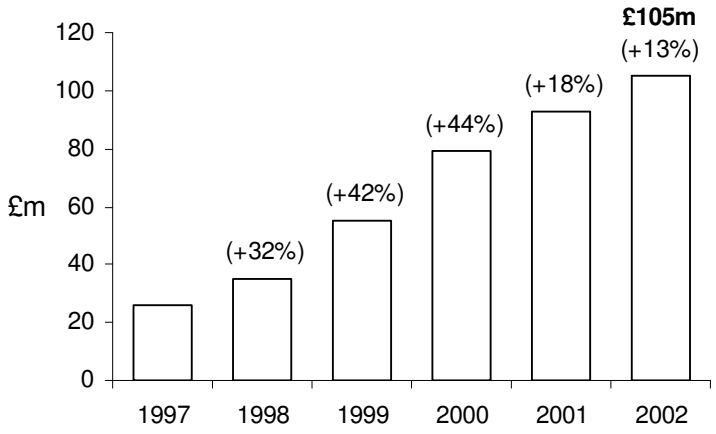
(Source: HDRA: Soil Association, 2002)

3.2 Growth of the organic vegetable market

During the late 1990s and the early 2000s the growth of the organic vegetable market was very rapid (Figure 2). Growth rates in the past five years have averaged 30% per annum, although this is now beginning to slow down to rates of between 10-15% per annum in 2002. The rapid growth in the organic vegetable market has been in parallel with the growth of the whole organic food market in the UK. This has been due to a number of factors, which have resulted in greater consumer awareness of food safety, health and environmental issues, pesticide overuse and the use of Genetically Modified Organisms (GMOs) in conventional production. These have all caused more consumers to buy organic vegetables.

The stronger supermarket presence in the market towards the end of the 1990s has also assisted market development. They have stimulated consumer demand and awareness by high profile advertising and by removing some of the supply side impediments to growth of the market, which included inconsistent supplies and quality (Organic monitor, 2001). By the use of conventional pre-packers the supermarkets have also shortened the supply chain, which had previously been dominated by a small number of wholesalers, this combined with the sale of higher volumes have enabled them to reduce costs and consumer prices.

Figure 2: Growth of the organic vegetable retail market in the UK

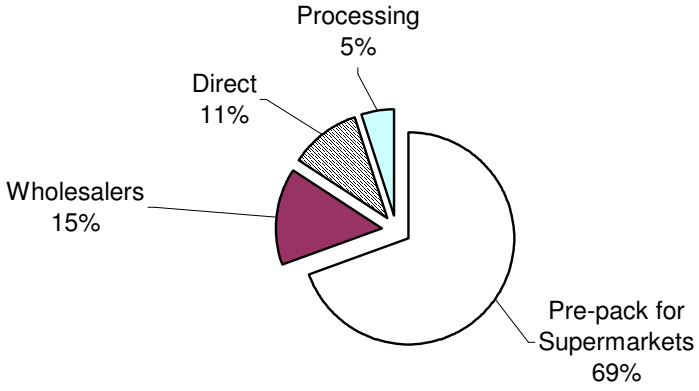


(%-increase relating to previous year,
Source: Organic Monitor, 2001)

3.3 Structure of the organic vegetable market

The supermarkets, through their suppliers, the vegetable pre-packers, now dominate the organic market (Figure 3). This has been at the expense of wholesalers of organic vegetables and direct marketing like farm shops, box schemes and farmers markets. The processing sector remains small.

Figure 3: Market outlets for organic vegetables in 2002

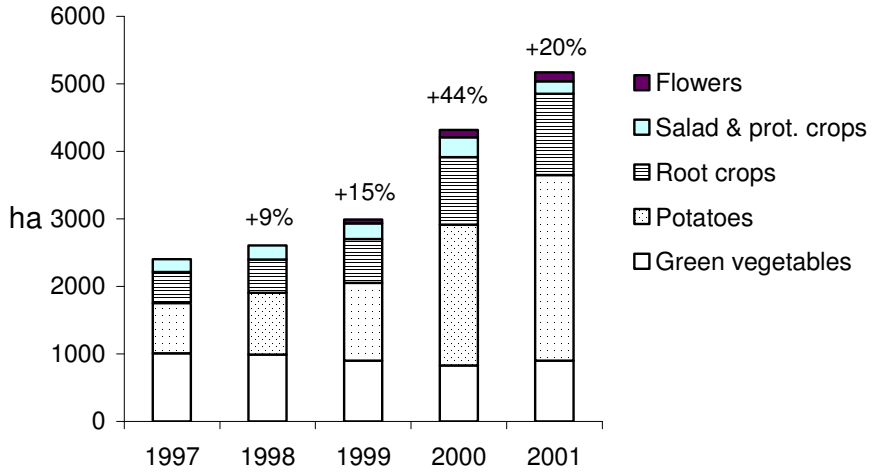


(Source: Firth et al., 2003)

4 The supply of organic vegetables in the UK

Despite the rapid growth in the demand for organic vegetables, there has been a relatively slower increase in UK supply (Figure 4). Therefore initially a large proportion of the increased demand was met by imports, reported as meeting 60% of the UK market for vegetables in 2000 (Hamm *et al.*, 2002) or as high as 85% when combined with fruit (Soil Association, 2002)

Figure 4: UK area of organic vegetables and flowers 1997-2001



(Source: Soil Association, 2002)

The initial slow response in the increase in UK supply during 1998/99 can partly be explained by the two-year conversion period, which is required before organic production can begin, thus delaying growers ability to respond rapidly to meet changes in demand. Other constraints (Table 1) to growers converting to organic vegetable production were the unfamiliarity with and lack of published knowledge on organic production systems. These included uncertainty of how they would control weeds, pests and diseases. There are also higher 'costs of conversion' that vegetable growers have to incur, in comparison with conversions to other organic farming systems. These costs are mainly related to the need to take land out of production during the conversion phase and the subsequent loss in income during this period. The more intensive the production system is, the higher the conversion costs are likely to be (HDRA, 2000).

Table 1: Drivers and constraints to UK domestic supply of organic vegetables

Drivers	Constraints
• Price premiums	• High costs of conversion
• Government policy (incentives, subsidies)	• Lack of information on the impact of conversion on farm finances
• Supermarket pressure	• Delay of conversion process
• Poor returns in conventional sector	• Perceived technical problems

Up until the mid 1990s much of the UK organic produce had been supplied from smaller farms, often not located in conventional vegetable producing regions. The more rapid increase in the area of organic vegetables, experienced from 1999 to 2001 (Figure 4), was closely linked to the fact that in April 1999 the UK government increased the payments available for organic conversion. The increase from £250/ha to £450/ha acted as an incentive to conversions. In addition, the supermarkets were pressing the growers, who supplied them conventionally, to convert and supply them with organic produce. In the late 1990s there were quite high 'price premiums', over those paid for conventional produce, available for organic produce, enabling good financial returns to be obtained by organic vegetable growers (HDRA, 2000). This coupled with low prices and returns in the conventional sector further stimulated some growers to convert to organic production. In the late 1990s this resulted in a wave of new conversions from a number of large-scale conventional vegetable producers.

The much more rapid increase in the UK area of organic vegetables resulted in a significant increase in the supply of UK organic vegetables in the 2000/01 marketing season. The consequence of this increase was that there was an oversupply for many organic vegetables at certain times of the year notably for potatoes, cabbage and lettuce. Although, on average, UK self-sufficiency in organic vegetables is estimated to have risen to 57% (Figure 6), however, the average hides a wide variation from 96% for Swedes to 33% for onions. In 2002 packers and wholesalers estimated that there was still potential for the UK producers to further substitute imports by 10-15%.

4.1 Influence of conversion economics on supply

In order to comply with organic standards for crop production, land must go through a 24-month period of conversion before crops can be planted and subsequently sold as organic. Conversion must also begin with a fertility-building phase of at least 12 months (Soil Association, 2002). This is usually a grass clover ley, which may be grazed by animals or cut and mulched. Products can be grown and sold as 'in-conversion' after the initial 12 months, however, in practice the market for in-conversion vegetables is small and

most farmers enter land into organic production with a 2-year conversion period with no produce to sell from the land during this period.

Most vegetable producing farmers have experienced a decline in income during this conversion phase. The degree of decline on each farm is related to the level of intensity of production prior to conversion and to the proportion of land entering conversion each year or the rate of conversion. This reduction in income during conversion is combined with the need to invest in new equipment for tasks such as mechanical weeding. Typically, investment costs have been £20,000-30,000 per farm. On a 200 ha mixed cropping farm, converting to organic vegetable production this is estimated to be £150/ha. The total 'costs of conversion', including the reduction in income on the same farm, are estimated to be £460/ha. The overall costs of conversion can in many cases be offset by claming organic aid (£450 per hectare over 5 years) and set aside payments (£300/ha) on the grass clover leys. Where land is not registered for arable area payments, for example on more intensive vegetable farms, set aside payments are not available and organic aid is payable at a lower rate, thus pushing up the 'costs of conversion'.

4.2 Influence of production economics on supply

The economics of organic vegetable systems following conversion will be dependent on yields, prices, costs of production and the amount of fertility building crops that are contained in the rotation. Immediately following conversion, yields of vegetables are likely to be 40-50% below conventional levels, although in subsequent years yield levels are shown to be increasing. This is partly due to greater proficiency in organic production methods and also due to enhanced soil fertility as the organic system becomes more established. In the 1999 and 2000 crop years, prices for organic vegetables have commonly been double that of conventional levels, enabling farmers to obtain financial outputs figures comparable to that achieved in conventional production. Also on most of the monitored farms in the study gross margins achieved have been equivalent or in some cases higher than comparable conventional levels (HDRA, 2000).

However, the 2001 season saw organic vegetable prices fall on average by 20-25%, as the supply increased, which has led to a reduction in net farm income, in the extreme to a halving in net farm income on one farm. This demonstrates the sensitivity of the economics to declining prices. Prior to conversion farmers stated that their biggest concerns were technical ones, such as control of pest and diseases and weed control. In 2001/02 marketing became the biggest challenges for organic growers as the supply of UK and imported vegetables on the market increased.

On the inputs side some costs of organic vegetable production are higher and others lower than conventional production. For example with broccoli (Table 2) the costs of organic seed results in there being significantly higher costs for plants than those incurred in conventional production.

Table 2: Comparison of organic and conventional gross margins in broccoli production (£/ha)

	Organic	Conventional
OUTPUT		
Marketable yield (t)	6	7.6
Price (t)	700	500
Total output	4200	3800
VARIABLE COSTS		
Plants	1100	500
Crop protection	60	81
Fertilizers	50	103
Casual labour: plant	371	187
hand weed	212	0
harvest	636	1179
Total variable costs	2439	2050
GROSS MARGIN	1761	1750

(Sources: organic HDRA, Lampkin *et. al.*, 2002: conventional Chadwick, 2002)

Higher costs are also found for weed control due to the greater use of casual labour for hand weeding (Table 2). Weed control costs can however vary greatly depending on the crop (Table 3), the weather, equipment available and skill of the grower**.**

Table 3: Costs (£/ha) of weeding organic field vegetables

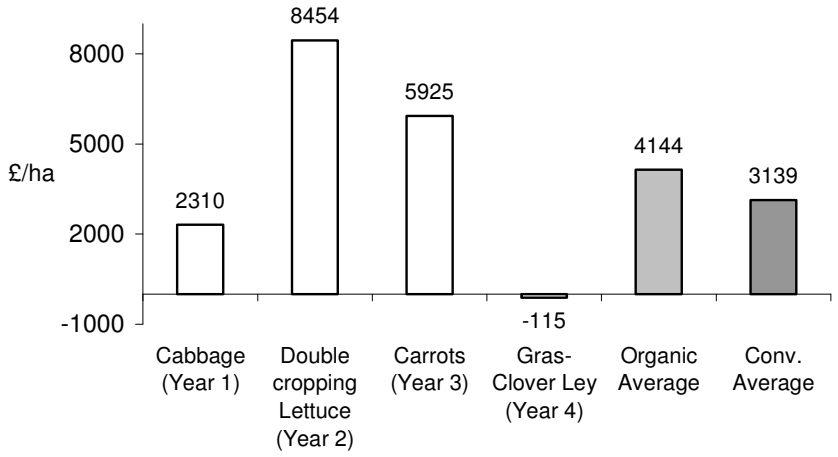
	Hand (h/ha)	Mechanical	Total
Carrots	1060 (200)	220	1080
Leeks	530 (100)	128	658
Broccoli	212 (40)	56	277
Lettuce	100 (19)	64	164
Potatoes	0	150	150

(Source: HDRA, 2002)

In common with conventional production, organic farms make use of gang or contracted labour, although problems managing these can be compounded in organic systems where it is difficult to fix piece rates for tasks such as weeding. In response there is evidence that organic farmers are developing improved mechanical weeding systems in order to reduce labour use. This is partly driven by the difficulties in sourcing labour in some parts of the country. Labour shortages could well be a constraint to the future expansion of organic vegetable production.

An additional cost of organic vegetable production is that related to the needs to have a proportion of the rotation in fertility building crops. In many vegetable growing regions, which are stockless, restoring of fertility, in the absence of chemical fertilisers, is achieved by the growing of leguminous crops, commonly grass clover leys or in some cases over-wintered green manures. This may occupy 25-40% of any organic vegetable rotation. In terms of economics this cost needs to be considered over the rotation (Figure 5), whereby the average gross margin for the rotation incorporates the cost of the fertility building.

Figure 5: Gross margins of a 4-year intensive organic field vegetable rotation in north-west England.



(Sources: organic data HDRA, 2002; conventional average Clare, 1999)

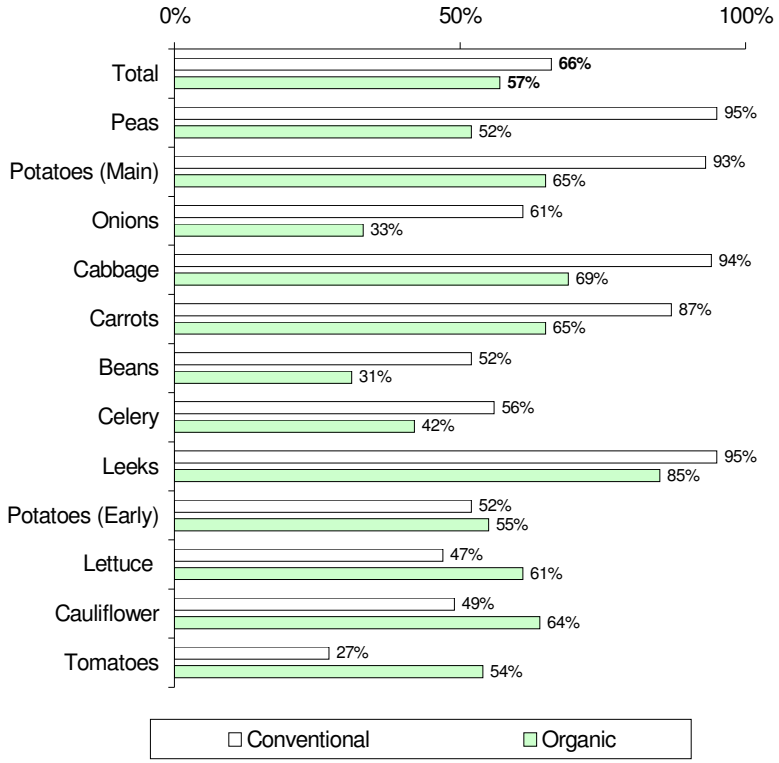
5 Future development

In future, the market is expected to grow at a slower rate than the past 5 years, predicted by marketers at between 10-15% per annum. A wide range of factors including; changing consumer trends, the level of disposable incomes, the occurrence of food scares and government policy will determine the future growth of the market. Presently, the organic market is dominated by a core 8% group of 'committed' consumers who account for 60% of the market, the remaining 92% of organic consumers 'the dabblers' buy on a less frequent basis and account for 40% of the market (Soil Association, 2002). For the market to grow the challenge is firstly to encourage the 'committed' to spend more, and secondly to convert the 'dabblers' to become more frequent buyers of organic food. Additionally there are new opportunities for growers to start to supply catering and institutional outlets, to expand into the chilled and prepared sector and to increasing focus on regional and local foods, all which have potential to grow (Firth *et al.*, 2003). The Food and Farming report of the Policy Commission on the Future of Food and Farming in the UK is favourable to the development of organic farming, with its recommendation for a strategic plan for organic farming (Crown, 2002). The English government's Organic Action Plan (DEFRA, 2002a)

has already begun to take some of these issues forward; notably in seeking to develop the domestic supply to match levels which are achieved in the conventional sector.

A comparison with self-sufficiency levels in the long established UK conventional vegetable market (Figure 6), shows some potential for UK organic vegetable production to gain market share. While the conventional self-sufficiency is 66% overall, the organic one is only 57%. Assuming that organic consumers give preference to local produce and are concerned about 'food miles' the organic self-sufficiency could be higher than for conventional vegetables. Figure 6 suggests a market potential for peas, main crop potatoes, onions, cabbage, carrots, beans, celery and leeks.

Figure 6: UK self-sufficiency in organic and conventional vegetables in 2001 (volume %).



(Source: organic data HDRA: conventional data DEFRA, 2002b)

A comparison with one of the biggest organic markets in Europe Germany, indicates that there could be potential for growth in the wholesale and direct marketing channels in the UK (Table 4, Michelsen et al., 1999). Although, the dominance of the supermarkets in the UK, may counter this.

Table 4: Market channels for organic vegetables in the UK and Germany

Country:	**UK**	**Germany**
Value:	£143m	£200m
Wholesale	15%	40%
Direct	11%	25%
Supermarkets	69%	25%
Other	5%	10%

(Source Germany data: Michelsen et al., 1999)

As outlined previously, one of the reasons for the high growth rate in the UK has been the presence of the supermarkets. The value and market share sold through wholesale (40%) and direct marketing (20%) in Germany is a result of a slow and steady growth in this country during the last two decades. With the projected slower growth rate in the UK there appears to be potential to further develop market channels like box schemes, farmers markets, farm shops and specialist retailers.

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