UNIVERSITY OF GLOUCESTERSHIRE
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A SUS-CHAIN case study

Local food within Gloucestershire: the potential for building a local food economy in the county

Summary Report

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Countryside and Community Research Unit

Contents

1 Introduction

This Gloucestershire study was conducted as part of a larger three year project researching sustainable food chains and rural development across Europe (SUS-CHAIN QLK5-CT-2002-01349). SUS-CHAIN aimed to:

- map the diversity of food supply chains in different parts of Europe;
- explore bottlenecks and constraints to the achievement of sustainability in different supply chains;
- examine different ways of communication and mechanisms of economic co-ordination between actors in the food chain;
- develop performance indicators that assess the collective performance of the food chain as a whole towards sustainable food production and transparent food markets and;
- review policies and recommend changes that might promote more sustainable food supply chains.

SUS-CHAIN's concerns and interests parallel those of the Policy Commission on the Future of Farming and Food, the Curry Report (Defra 2002a) to strengthen the local food sector, in particular to: shorten the food chain; support collaboration; and enable the development of local food markets (including the supply of local and organic food to schools and hospitals). The Gloucestershire study also builds on the Government's subsequent response, the Strategy for Sustainable Farming and Food (Defra 2002b), which encouraged better cooperation between farmers and other actors within the food chain.

Gloucestershire was chosen as a SUSCHAIN case study area because the county had a wide range of food products that built upon a long-standing tradition of socially and geographically embedded local production. Morris and Buller (2003) found that there were a large number of farm shops and more than 150 organic and local food and drink producers who sought to market either all or a proportion of their produce within the county. However, Gloucestershire Food Vision 'an integrated food policy for the people of Gloucestershire' (Gloucestershire First, 2005), highlighted that there is *"a distinct lack of good Gloucestershire evidence around food related issues"* and that *"research that is distinct to Gloucestershire needs is essential".* This finding reinforced an earlier observation of the Gloucestershire Food Procurement Strategy Group (2004) that:

> *"Despite a vast array of products it is well known that Gloucestershire is very heavily focused on meat and dairy items. We would be in short supply to meet the demand for fruit and vegetables. That said, there is no specific evidence base from which to work... we recommend a detailed audit be carried out of every item produced within Gloucestershire."*

The Institute of Grocery Distribution's (IGD) Consumer Watch (2002) found that local foods are particularly associated with fresh fruit and vegetables, meat, and dairy products. Subsequent consumer research undertaken by the Institute of Grocery Distribution (2005) revealed that the most popular product categories were vegetables and fruit purchased by 61% and 45% respectively of local food customers; milk, red meat and poultry were also popular choices. Consequently, it was determined that these food areas, excluding poultry (as there was only one major producer in the county, Freemans), would be the focus of the Gloucestershire study.

Gloucestershire First, a countywide economic development partnership, indicated that there is considerable room for growth in niche markets for fresh foods and speciality products, especially if linked to Gloucestershire's large rural tourist industry (www.glosfirst.co.uk 2005). Tourism contributes £705.7 million to Gloucestershire's economy each year and is the county's fourth largest employer supporting one in nine jobs. Market towns dispersed throughout Gloucestershire account for around one third of the county's population and have proportionately more people employed in distribution, hotels and restaurants, indicating a greater dependence on tourism. Gloucestershire First also identified that not only are there opportunities to capitalise on the image of Gloucestershire, the Cotswolds and the South West regarding food origin, but also to capitalise on the demand for greater 'transparency' in food supply.

At the regional level, the South West Regional Development Agency targets Food and Drink as a key sector, and through South West Food & Drink, which was set up in 2002, it funds a number of projects designed to assist growers and manufacturers with marketing and distribution. For example, the Rural Enterprise Gateway (REG) initiative undertakes research for individuals, such as a farm business wanting to sell its meat, and provides support for groups of farmers with a common interest, e.g. the Abbey Milk REG group of Gloucestershire dairy farmers' funded study tour to British Columbia to learn from their best practice.

In the East of England it was found that when not selling directly to consumers, food enterprises involved with the local food sector sold most frequently to local retailers and local caterers (Hoskins 2003), implying that there should be similar opportunities to do this in Gloucestershire. However, Morris and Buller (2003) noted that the growth of farmers' markets and other new forms of local food marketing were making it difficult for established local retailers in Gloucestershire to source sufficient local supplies. They described this as a "competitive localism" that needs to be addressed to ensure that the local food sector realises its full potential.

Saltmarsh and Wakeman (2004) concluded that three key actions were required to re-localise the food supply chain: improving communication across the food supply chain, the creation of an efficient local distribution infrastructure, and improved local processing facilities. Consequently, this study set out to investigate these issues and address the evidence gap. In particular the study aimed to calculate the size of selected sectors of Gloucestershire's food production base – fruit and vegetables, meat, and dairy; and to identify what proportion of local production is consumed within the county. This report can usefully be read in conjunction with the Public Food Procurement Study (2005) produced by Gloucestershire Food Vision. Although the two reports are not specifically linked in any way, both are aimed at contributing towards a greater understanding of the issues and potential marketing opportunities for Gloucestershire produced food products. They provide a snapshot of the current situation in the county. This new study provides additional and complementary data focusing on the potential demand for local produce, particularly in private catering, as opposed to public sector procurement.

There is a full report available from The Countryside and Community Research Unit, University of Gloucestershire, telephone 01242 544083, or www.glos.ac.uk/ccru.

2 Methodology

Primary data was collected through:

- interviews with Gloucestershire abattoirs, wholesalers, butchers, dairy processors, green grocers and
- a survey of food service businesses across the county.

Secondary data used included the Annual Agricultural Census (Defra), the Annual Business Inquiry (ONS), regional reports (SWRDA), and various consumer surveys including the Public Consultation for Gloucestershire Food Vision (2006) and relevant food sector reports from the Milk Development Council, Meat South West and Mintel (a leading supplier of market research and consumer intelligence), among others.

Farmers were not included in the primary research activity. Farmers' low response rates to surveys undertaken by other organisations indicated that without a financial incentive they would be unlikely to respond in sufficient numbers. Instead, secondary data were interpreted from the statutory Annual Agricultural Census carried out by Defra, which according to the Annual Review of Statistical Surveys achieves a response rate in excess of 65% (Defra, 2005).

It was found that government data could not give definitive information on annual production by volume for the county for most food products. However, it was possible to obtain sector values and extrapolate production volumes from aggregated information for particular crops and by applying average yields for these, after Saltmarsh and Wakeman (2004). Discussions with experts in the meat industry including, Meat South West, The Meat and Livestock Commission, and English Food and Farming Partnerships, indicated that there was no straight-forward way of calculating meat production by volume for just Gloucestershire and subsequently identifying how much of the production stayed within the county. The British Cattle Movements Service was not able to interrogate their database to supply aggregate cattle movements in and out of Gloucestershire.

Preliminary discussions with major multiples revealed that they did not routinely track sales back to the county of production, and combined with centralised distribution systems, this meant that there was insufficient data to quantify local food production and sales through supermarkets - the 'mainstream' food supply chains in the county. Despite this lack of data, some anecdotal evidence was gathered about particular products produced within Gloucestershire, as well as supermarket sourcing policies, for example, the Mid-counties Cooperative 'Local Harvest' range and Somerfield's

'Local Life' campaign do source locally. Consequently, it was decided to concentrate on the secondary retailers i.e. butchers and green grocers and to see how 'traditional' supply chains were changing to ensure survival. Particularly, as Hoskins (2003) found, local producers were most likely to sell to local retailers if not selling directly to the public. Butchers and green grocers are responsible for around 15% of meat sales (Mintel, 2004) and 10% of fresh fruit and vegetables sales respectively in the UK overall (Mintel, 2005). Consolidation in the major multiple sector - 80 pence in every pound is spent in the top four multiples' stores (Tesco, Asda, Sainsbury's and Morrisons) (IGD, 2003) - is effectively giving customers less choice in their 'shopping experience'. This means that there is an opportunity for 'alternative' food supply chains, which provide both a different shopping experience (usually a more personal one) and a different produce range that is more likely to be of local origin.

Table 1 Food Supply Chain 'families' in the United Kingdom

	Mainstream	**Traditional**	**Alternative**
Examples	Supermarket Food Branded Products	Wholesale Markets Specialist Food Outlets Local Shops	Farmers' Markets Farm Shops Box Schemes
Share of the market and trend	High (around 80%) Continued Growth	Low (around 15%) Declining	Very Low (<2%?) Growing
Logistics (Food)	Integrated & efficient	Fragmented	Piecemeal
Retail & Catering	Multiple retailers Chain caterers	Traditional shops Independent & Local	Direct Sales Home Delivery
Geographical Length	Long	Medium	Short

Source: After Saltmarsh & Wakeman, (2004)

Given the concentrated structure of the dairy processing sector, the two main milk processors in the county, Dairy Crest and Cotteswold, were interviewed. Gloucestershire First provided a dataset of food related businesses in Gloucestershire and a programme of fieldwork was devised comprising semi-structured interviews, face-to-face where possible and telephone interviews where not, with samples made up of butchers and green grocers.

A questionnaire was subsequently sent to a stratified sample of around 500 key food service businesses in the county comprising all licensed restaurants, all hotels, and 50% of Gloucestershire's public houses to ascertain their needs and establish any trends in sourcing food in the industry. A hamper of local produce was offered via a prize draw as an incentive. There was a relatively low response to this survey (7.6%), due to the proximity of the Christmas period, the busiest time of the year for chefs. Consequently a further telephone survey of a random sample of 60 hotels and restaurants was carried out in February 2006. Feedback was received from a total of 99 Gloucestershire food service businesses.

3 Main findings for three food sectors

The South West's share of the UK's gross output of agriculture of £16.9 billion was 13.1%, Gloucestershire's share of this was around 10.5%, equivalent to 1.4% of UK gross output in 2004 (Defra). Agriculture's share of total gross value added was relatively low, contributing 0.7% for England and Wales, showing that most value is added further along the supply chain away from the primary producer. Headline gross value added by agriculture, hunting and fishing by NUTS3 area (Gloucestershire) in 2003 was £166 million. In 2003 the gross value added by the manufacture of food products and beverages (SIC 15) in Gloucestershire was around £250 million.

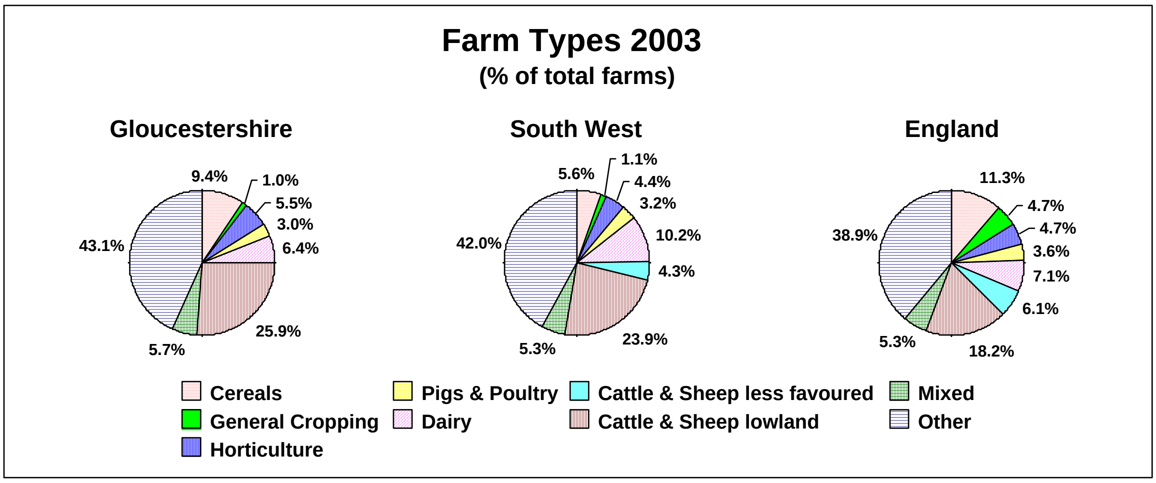
Table 2 The value of South West and Gloucestershire (Glos.)agricultural production by selected sector

	2004					
	UK £m	**South West £m**	**SW as a % of UK**	**Glos. £m**	**Glos. as a % of UK**	**Glos. as a % of SW region**
Potatoes	633.2	27.3	4.3	2.1	0.33	7.7
Vegetables	926.9	49.4	5.3	5.6	0.60	11.3
Fruit	318.6	28.7	9.0	7.0	2.20	24.4
Meat	4,056.4	747.3	18.4	70.9	1.75	9.5
Dairy	2,615.3	679.4	26.0	46.3	1.77	6.8
Sub-total	**8,550.4**	**1,532.1**	**17.9**	**131.9**	**1.54**	**8.6**

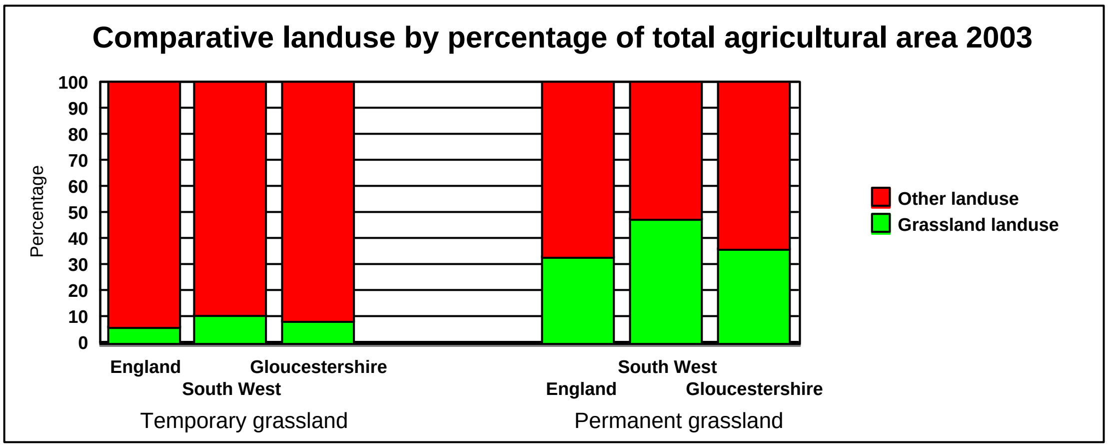
Source: Defra[1]

The South West provides around a quarter of the UK's dairy production by value and just under one fifth of UK meat production, but significantly smaller proportions of fruit and vegetables. Gloucestershire's annual agricultural production of meat and dairy by value is substantial, around £71 million and £46 million respectively in 2004, whilst expenditure on meat in the county was around £150 million, with £79.5 million spent on dairy products. Fruit and vegetable production is around one tenth of the value of these sectors, but Gloucestershire contributes relatively more fruit than vegetables to the region (around one quarter) and nationally (circa 2.2%). Gloucestershire farmers need to adapt to current consumer trends including: growing demand for convenience foods; interest in the provenance of food and transparency; and an emphasis on health and integrity (Farm Assurance Schemes)(EFFP, 2005).

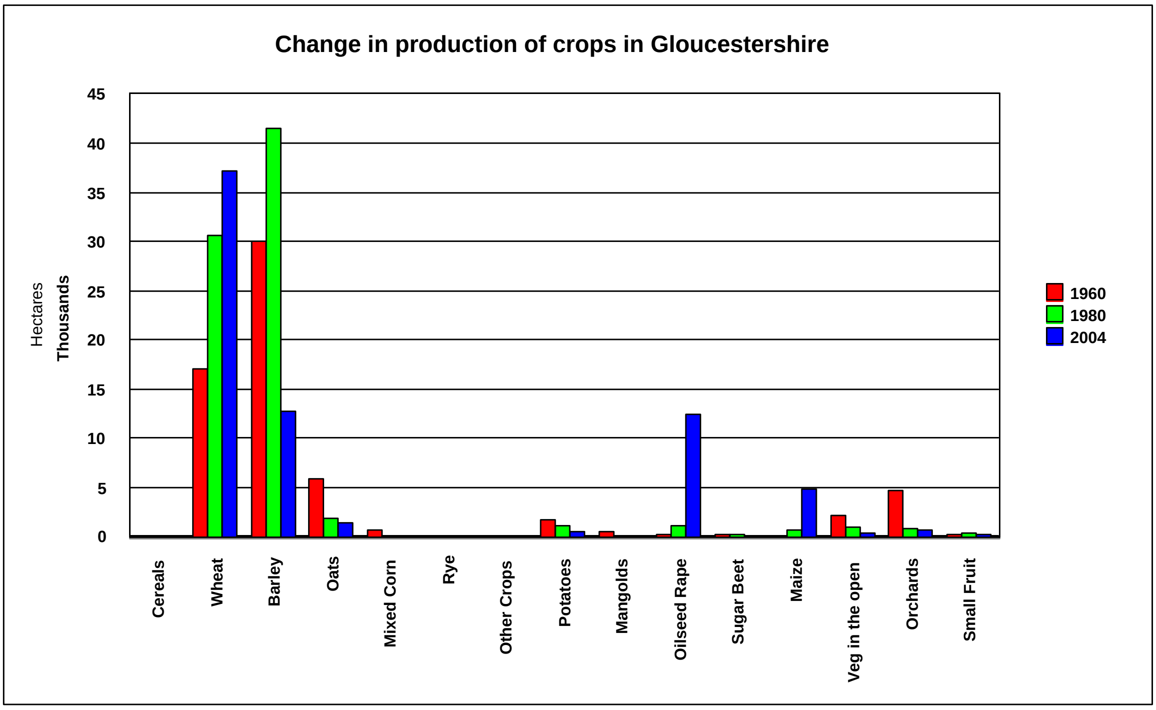
[1] NB. The data are estimated from the Aggregate Agricultural Account for England and from regional data on crop areas, livestock counts and labour collected in the Annual Census of Agricultural and Horticultural Holdings. It is assumed that revenue and costs are proportional to crop areas, livestock counts and labour. These data are provisional and subject to statistical error. Due to the provisional nature of the data these figures are to be used for research purposes or other similar activities only. © Crown copyright, 2006



Gloucestershire has proportionately more cereal farmers in comparison to the South West overall. There is also relatively more horticulture in Gloucestershire in comparison with the South West region and the rest of England, offering some scope for increased localised supply. Around one quarter of all farms in Gloucestershire, and in the South West region generally, farm lowland cattle and sheep. This is proportionately significantly more than in England, explaining the Gloucestershire Food Procurement Strategy Group's (2004) finding that there is a focus on meat items in the county. Gloucestershire and the South West region have a significantly higher proportion of temporary and permanent grassland compared with England as a whole. This grassland is used for raising livestock in the south of the region and finishing livestock in the north of the region, i.e. in Gloucestershire and Wiltshire.



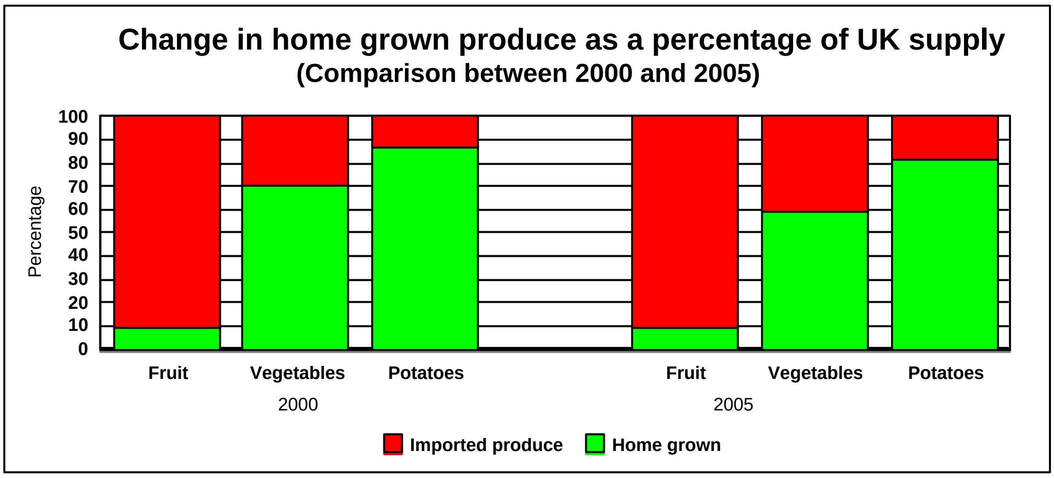
The Forest of Dean District has the highest concentration of high-grade land in Gloucestershire, which is valuable for horticulture, as well as some of the poorest land in the core area of the forest. In contrast, the Cotswolds has the largest proportion of Grade 3 land, facilitating a variety of farming uses including arable, fodder crops and livestock grazing, such as sheep (Defra). Morris and Buller (2003) identified a long-standing tradition of socially and geographically embedded local production in Gloucestershire and around a century ago the Cotswolds were characterised by a mixture of arable and sheep farming, the Severn Vale was famous for its dairy products and pigs; the Forest of Dean had small mixed farms; and the Leadon Valley around Newent was an area of fruit orchards and market gardens (Countryside Agency, 2005). Cropping, however has changed significantly over the last 45 years.



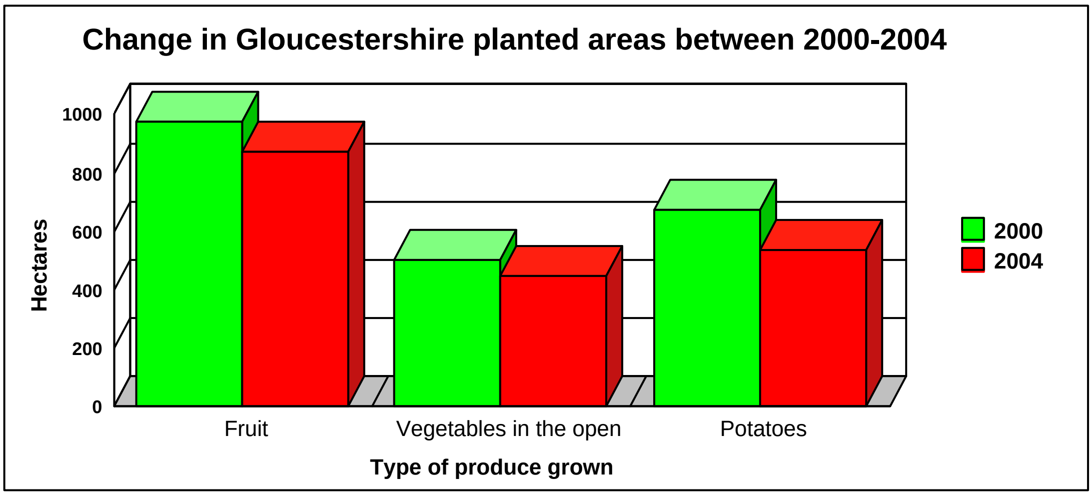
Maize and Oil Seed Rape have both increased in production, from zero and very low production levels, to become some of the most widely grown crops. In Gloucestershire, maize is used primarily for fodder for dairy cows. Traditional crops like top fruit and vegetables have fallen to very low levels (Defra, 1960-2004).

3.1 Fruit and vegetables

A SUS-CHAIN report, that analysed the Food Supply Chain dynamics and diversity in the UK, concluded that the planted area in the UK is declining whilst a mismatch between domestic varieties and changing consumer preferences is creating a crisis in national primary production (SUS-CHAIN, 2003). From 1990-2002 the number of apple orchards in the UK halved (NEF, 2002), and from 1990-2000 UK fruit and vegetable production reduced by 37% (Local Food, 2002). Consequently, in 2005 the UK share of home production by volume was just 59.5% of all fresh vegetables compared with 71.5% in 2000; and only 9.8% of fruit was home grown.



Planted areas have been declining in Gloucestershire reflecting the general UK trend, except for small fruit planting (such as strawberries and raspberries), which has actually increased.



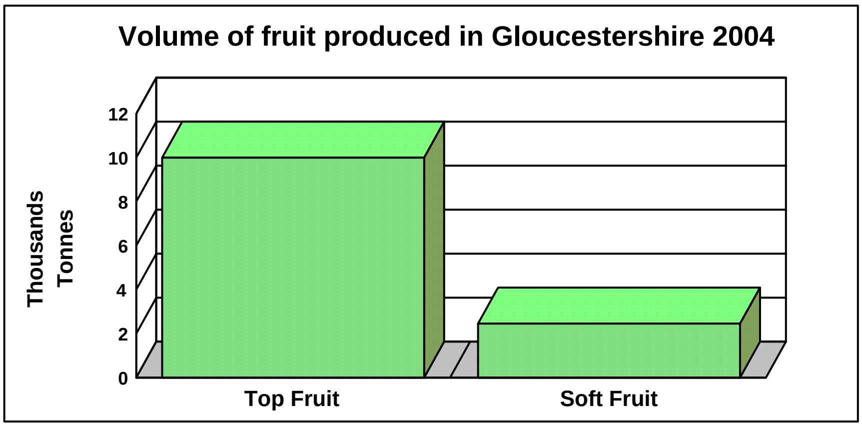
In Gloucestershire there are progressively fewer farmers as more are leaving the industry and those that are left are growing fewer varieties of fruit and vegetables. This means that there is declining capacity for boosting local supply in the short term. This is compounding the concerns of the Gloucestershire Food Procurement

Strategy Group (2004) about inadequate local fruit and vegetable supply. In neighbouring Worcestershire, there is intensive cultivation in the Vale of Evesham dominated by small-holdings, many with low bush orchards growing plums, and apples and pears benefiting from the mild winters (little frost) and warm summers. However, farm shops located at garden centres with a big customer throughput cannot source enough local produce (Hereford & Worcester Hub). In the Vale of Evesham spring onions are grown locally when in season and then imported from (local growers') farms in Portugal, Spain and Italy during the rest of the year. This appears to be driven by the customer wanting the same produce all the year round i.e. customers such as supermarkets, schools, hospitals and catering (Hereford & Worcester Hub). One way for growers aiming to reintroduce the concept of seasonality to customers, and raising awareness about cheaper seasonal produce, is through festivals celebrating local produce. Such festivals have been successful in Gloucestershire, for example, the local sprout festival held in Chipping Campden and 'Plum Day', held in Pershore on August Bank Holiday, is now in its 9th year.

Bucking the general trend (and although relatively small scale) the planted area of small (soft) fruit grew by some 9% between 2000 and 2004 in Gloucestershire, and it is estimated that around 700 tonnes of strawberries were produced in 2004. From June to the end of the summer, Asda's Gloucester store sources 80% of its strawberries from Herefordshire or Gloucestershire. It would be useful in the future to assess the potential for expanding production capacity in the county, as for example, English strawberries attract a premium because of their superior flavour. The English strawberry growing season has already become much longer as a result of the use of glasshouses and nurseries, and climate change may lengthen the growing season still further. Longer hotter summers may also increase demand, and affect demand for other produce such as salads and meat for barbecuing (EFFP, 2005).

In 2004, Gloucestershire was around 75% self-sufficient in fresh potatoes. Stokes, a green grocer chain with 63 stores in the South West, supplied their whole chain of green grocers centrally with Cotswold-grown potatoes (Cara variety) in the winter of 2005. Although the majority of potatoes are sold through professional potato merchants, potatoes have significant farm gate sales and direct sales compared with other bulk crops. There may be opportunities to develop these sales within Gloucestershire through local shops and petrol forecourts, for example, Gloucestershire producers could sell potatoes to local retailers in 25kg bags. This would help to ease the 'competitive localism' described by Morris and Buller (2003) where farmers' markets and other forms of direct retailing organised by producers, have negatively impacted upon the ability of more established local retailers to source local supplies. The proportion of villages with small shops selling some local produce in Gloucestershire was relatively low at 27.8% in 2000 (Countryside Agency, 2000), compared to the national average, which was around a third. In North Somerset and South Gloucestershire the proportion of small shops stocking local produce was even higher, 42.6% and 41.3% respectively. As a result, there appears to be scope to encourage Gloucestershire's small shops to stock more local produce to at least match these levels. Petrol forecourts benefit from their accessibility and are increasing market share, so these outlets also present a market opportunity for local growers.

Around 23,500 tonnes of fresh fruit was consumed in Gloucestershire in 2004 (Defra Expenditure & Food Survey, 2005) and if approximately half of this is citrus fruit, bananas and exotic fruits (Mintel, 2005) then local fruit growers are meeting just over half of Gloucestershire's indigenous fresh fruit requirements calculated to be 7,000 tonnes out of some 11,750 tonnes (23,500/2), once allowance has been made for the proportion of fruit used for juicing and other fruit products.



Around 4.5% of the county's population shop at Gloucestershire's green grocers (Consumer Survey, 2006) and green grocers' locally produced fruit and vegetable sales were broadly estimated to be 2.0% and 2.5% respectively of total fruit and vegetable sales in the county. However, the sample was small and may be an overestimate as Stokes estimated that 20% of their sales may be local produce in the summer in shops in Cornwall and Devon, but only 10% in the winter i.e. equivalent to 1-2% of all vegetable sales. However, the growing season in Cornwall and Devon is longer than Gloucestershire's, which reduces local competitiveness.

The demise of Gloucester's fruit and vegetable wholesale market has affected retail sourcing with custom diverted directly to wholesalers, as well as to Bristol and Birmingham wholesale markets. One interviewee commented:

> *"Since they shut Gloucester market, buyers have faded away. All fruit and vegetables are bought from wholesalers."*

Green grocers in Gloucestershire appear to be finding it difficult to source local supplies of fruit and vegetables and feedback from interviewees clarified that this is because:

- There are fewer producers producing fewer varieties (for example, many farmers leaving the industry used to grow beans, swedes and peas);
- Green grocers are unable to deal directly with many growers, as the latter have arrangements or contracts with supermarkets;
- Wholesalers may charge green grocers more, but be prepared to sell at a loss to a supermarket;
- Green grocers are often sole-traders and consequently have little time to go to a market themselves.

As growers are becoming less keen to supply small independent green grocers, and the latter lack the time to go to more distant markets now that Gloucester market has closed, it may be more practical for growers to supply local distribution hubs instead. Independent retailers could then source produce from these. The new hubs could be located around Gloucestershire's market towns e.g. Cirencester, Tewkesbury and Wotton-under-Edge, to take advantage of the current road systems and local demand. The Green Grocer Initiative in Warwickshire and Worcestershire could be replicated in Gloucestershire, i.e. where producers deliver procured stock to a business hub managed by 'Green Grocer Limited' which then procures and distributes merchandise to fulfil customers' orders.

Mintel reported that organic food and drink sales almost doubled in value between 2000 and 2005 to £1.2bn and the market is forecast to grow to £2bn by 2010 (Mintel (2005). Fruit and vegetables are the most popular organic items and there may be an opportunity for more Gloucestershire farmers to convert to organic production, and for existing growers to expand their operations. There is evidence that this already happening as the number of organic farmers increased significantly in Gloucestershire between 1998-2004 from 10 farms to 65; a greater increase than in any of the seven surrounding counties. The number of organic vegetable farms in Gloucestershire quadrupled to 8 over the same period (HDRA, 2005). This is counter to the general trend for non-organic farms, which suggests that there may be potential for further expansion as demand continues to grow. Slipstream Organics, an organic box scheme serving Cheltenham, Gloucester and Stroud, source produce from 4 of these organic farms, although they mainly source produce from Flights Orchard Organics (a Hereford co-operative). However, they are keen to source more produce locally, as is Local Direct, a small scale Gloucestershire home delivery business set up in October 2005 which aims is to provide the consumer with fresh or organic food using the nearest local source wherever possible. However, the box schemes operated from outwith the county are also active in promoting their products within Gloucestershire. Whilst, several of the major multiples (Sainsbury's and Tesco) are to pilot organic vegetable box schemes (The Observer, 2006).

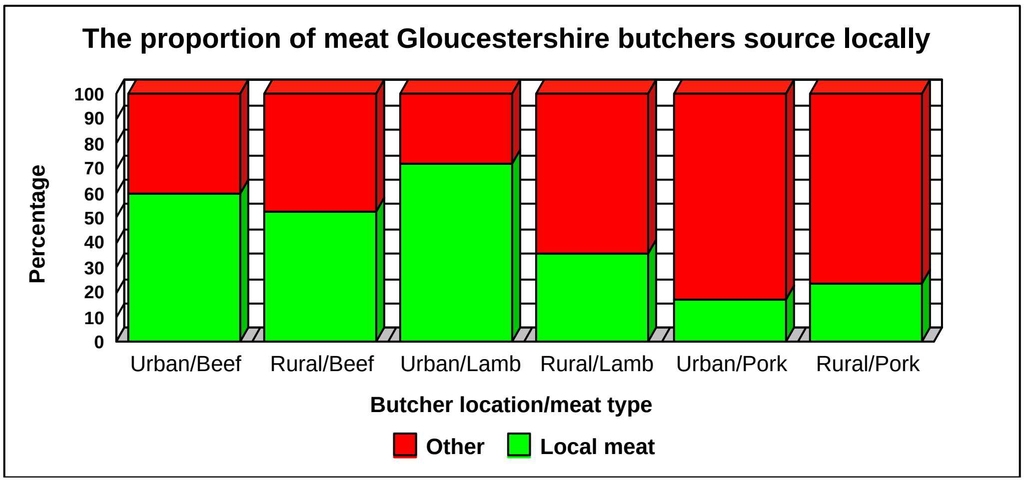
Table 3 Organic Producers in Gloucestershire and the surrounding Counties

	Organic producers			**Vegetable Farms**		
	1998	**2005**	**% change**	**1998**	**2005**	**% change**
Gloucestershire	10	65	+550	2	8	+300
7 counties	137	360	+148	46	81	+76

Source: Kate Mahoney, Henry Doubleday Research Association

3.2 Meat

Meat South West (2003) found that the South West is potentially self-sufficient in red meat, i.e. beef and veal, lamb and mutton, and the Gloucestershire Food Procurement Strategy Group (2004) noted that the county has a significant meat sector. In the past, store cattle have been sold out of the region for finishing and slaughter, where feedstuffs are cheaper. It has been suggested that keeping them in the area could enhance local abattoir throughput and added value in the region if acceptable finishing facilities can be established (Cooper Simms & ADAS Consulting, 2004). Gloucestershire is a suitable county for this, with both surplus arable crops for fodder and empty livestock buildings, as livestock production has declined. Interviews with several abattoirs, a local wholesaler and a sample of butchers revealed that around 50% of Gloucestershire's abattoir cattle throughput is perceived to be 'local' i.e. within a 50 mile radius. However, the proportion of cattle that are simply brought into the county for 'finishing', in contrast to 'locally raised' cattle, is not known. This is an important evidence gap.



Urban Butchers sourced around 60% of their beef locally and nearly three quarters of their lamb supplies. Butchers in rural locations sourced less meat locally, i.e. around half of their beef and slightly more than one third of their lamb. No statistical significance should be read into this variation, as the samples were not large. One enterprising rural butcher sourced all their beef from surrounding farms and thereby facilitated local abattoir use. This model could be replicated elsewhere in the county to encourage more localised supply and better cooperation between farmers and other actors within the food chain, as recommended by Defra (2002b). These findings reinforced Meat South West's (2003) judgement that there is considerable localised supply of beef and lamb in Gloucestershire. In contrast, Meat South West

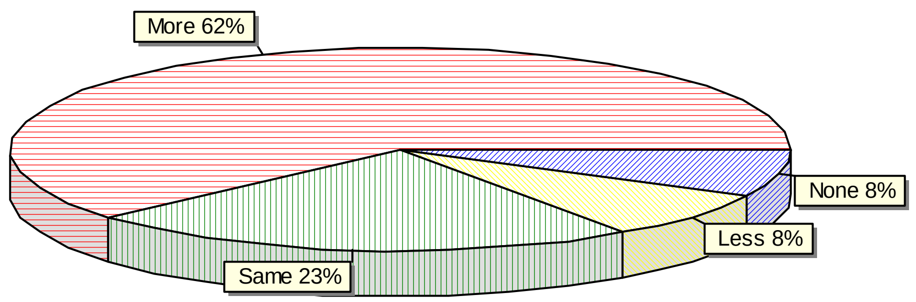
(2003) found that the supply of local pigs was not sufficient to meet demand. This was confirmed by the survey of Gloucestershire butchers conducted as part of this Gloucestershire research, which established that less than 20% of urban butchers' pork and 25% of rural butchers' pork was sourced locally. Butchers were mainly sourcing the Gloucester Old Spot breed locally. Very little poultry used by Gloucestershire butchers is local, and there is little prospect of capacity being increased in the short term, since Freemans, the main local producer located in Newent, has stopped doing van deliveries to retailers, and local wholesalers found this poultry supplier comparatively expensive.

Although this traditional meat sector is relatively weak, some Gloucestershire butchers have adapted their operations to facilitate sales. For example, The Country Butcher, located in Huntley, sell home-cured bacon, award winning handmade sausages and rare breed meat via the Internet, (there is a minimum order value of £30) (www.countrybutcher.co.uk). The beef is hung for 21 days before despatch to enhance flavour and the butcher guarantees complete traceability from the farm to the customer. Another butcher, Gurney's from Newent, have collaborated with Over Farm to supply local, high quality, Gloucestershire meat. The beef comes from the farm's own herd, that graze along the banks of the River Severn. These are reared on meadow pasture that is part of an environmental scheme that benefits the local wildlife, no sprays or fertilisers are used. The animals are slaughtered at a Gloucester abattoir, so the food miles from production to the customer is kept to a minimum. Gurney's pork comes from Gloucester Old Spot pigs raised near Newent and their lamb is also locally produced, and includes the Cotswold breed. (www.over-farm-market.com).

Gloucestershire First highlighted the potential for niche markets for fresh foods and speciality products, citing Gloucestershire's large rural tourist industry (2005). The provision of local game is one such opportunity that could be exploited in Gloucestershire. Mintel (2004) estimated that sales of game through butchers were almost twice that of sales through grocery multiples, by value, in 2004. Mintel identified that butchers were better placed to provide advice about how best to cook the game. The survey of butchers conducted as part of this research found that some Gloucestershire butchers licensed to sell game often source Scottish game via a Dorset outlet! Others however, rely on sourcing local game, on an ad-hoc basis, via local gamekeepers. This suggests that it may be profitable to coordinate the local supply of game within the county, since it is currently fragmented and there are large numbers of put-down pheasants and partridges. The product can command a premium and it also satisfies consumer requirements for healthier products and local food provenance (Mintel, 2004; EFFP, 2005).

Gloucestershire butchers' local meat sales (by value) was estimated to be 3.5% of all meat sales in the county.

How much local produce Gloucestershire butchers purchased in 2005 compared with previous years



Source: Gloucestershire Butcher Interviews (13), November 2005

Around 60% of the butchers sampled in Gloucestershire had bought more local produce over the last 12 months than previously. Importantly, the majority of butchers interviewed were keen to source more local meat (6 out of 8 urban butchers and 3 out of 5 rural butchers), reinforcing Hoskins' (2003) findings about the opportunity for producers to sell to local retailers. There is a real opportunity to boost this traditional food supply chain, where local farmers supply more to butchers directly through local abattoirs. This is an option that the Green Grocer Initiative is contemplating i.e. formally connecting dedicated livestock producers, abattoirs and butchers. However, the growth of farmers' markets and other new forms of local food marketing are making it difficult for some established butchers in Gloucestershire to source sufficient local meat supplies, so there does still appear to be "competitive localism" in Gloucestershire as Morris and Buller (2003) noted. Replicating the Green Grocer Initiative in Gloucestershire could help to resolve this problem.

Although private kills - i.e. animals slaughtered and returned to farmer for own consumption or further processing and selling - remain small-scale, they are on the increase and now account for up to 10% of throughput in one of Gloucestershire's medium sized abattoirs. This is because they are relatively more profitable for the farmer who then sells the meat directly to the consumer either via farm shops, farmers' markets or home delivery; effectively shortening the food chain as Defra recommended (2002a). It would be useful to monitor the value of these growing direct sales in the future, because if they are included with butcher sales of local meat it is likely that the size of the local meat sector in Gloucestershire is close to the upper limit identified by previous research into local food sectors i.e. around 5% of all meat sales (MacGillivray, 2001). Direct sales obviously present a growth opportunity for producers, but may compete with traditional butchers.

An Internet consumer survey (FARMA, 2004) found that 12% of UK adults visited farmers' markets and around 10% bought from farm shops and 4% from Pick Your Own farms. Although half of all respondents were aware of farm shops and Pick Your Own farms, awareness of farm gate sales and home delivery, especially for meats, was much lower at 18% and 9% respectively. The Gloucestershire Consumer Telephone Survey of 1,200 Gloucestershire residents (Foster, 2006) found that lower percentages (8.8% of residents surveyed), actually shopped at markets/farmers' markets (there are now on average 25+ farmers' markets held in Gloucestershire every month) and 5.25% at farm shops. The larger farm shops like Chestertons (Cirencester) and Over Farm also offer a valuable outlet for other local producers. It may also be possible to develop partnerships between the larger farm shops and local supermarkets whereby the former take on the role of a local sourcing hub, like Plumgarths for Asda in Cumbria (18 suppliers sell their goods to 2 Asda superstores via Plumgarths). There is a need for local Gloucestershire producers to use these alternative sales routes to promote themselves more effectively to maximise sales, particularly if they are selling meat via the farm gate and home delivery. This could be addressed by Gloucestershire Food Vision who hosted a procurement workshop for buyers in July 2006 and could also facilitate skills workshops for farmers. The Food Enterprise Development Service (FEDS) 'Train to Gain' initiative will also be available to food and drink producers in Gloucestershire looking to improve skills from August 2006.

Advantage West Midlands (September 2002) noted that consumption of ready meals and convenience meat products has increased by some 60% in the last decade. This market has already been successfully addressed in Gloucestershire by local producers like Simple Suppers and Frocester Fayre. Simple Suppers are pig farmers that produce dry cured bacon, ham, sausages and burgers and pork pies from their own pigs which are sold locally, usually travelling less than 20 miles from farm to plate. Seasonal and local produce are used in a range of hot eating pies, prepared meals, cakes, puddings, snacks. Frocester Fayre, is a mixed farm with beef, pigs and arable and they supply Severn Vale Pork (Cotswold Pigs reared on the farm), Beef (Aberdeen Angus and Welsh Black also reared on the farm) and lamb (bought in from local farms) and market homemade ready-to-eat meals. Having converted a dairy into a cutting area, they are members of the FABBL Farm Assured Scheme and sell produce direct to the consumer via their farm shop, farmers' markets and their home delivery service. Frocester Fayre also supply retailers and caterers.

The demand for convenience by consumers, and a de-skilling in the caterering sector, has driven the production of more highly processed products, including complete ready meals and sandwiches (Westley Consulting Ltd, 2004; Advantage West Midlands, 2002). Cooper Simms & ADAS Consulting (2004) noted that there are good meat cutting facilities in Gloucestershire that can provide meat-based convenience foods. In addition to Ensors and ZHM Abattoir Corporation (abattoirs), Cheltenham & District Wholesale Meat and Collicutt's, (the latter are two of the largest meat wholesalers based in Gloucestershire), have stand alone full throughput licensed cutting plants. As the demand for convenience food has escalated (EFFP, 2005) Ensors in Cinderford (Forest of Dean) have invested to add value to their operations by introducing a retail/catering pack line facility that provides an opportunity for collaborative activity with local producers and caterers in Gloucestershire. Ensors are currently using just half of a 40,000 sq ft factory to supply 500 different lines of value added products, so there is immediate capacity available to double kitchen-ready products. Currently, only some 10% of the food service business is local. This operation is highly flexible as all product can be boned and portioned into whatever pack sizes are required for distribution. As The Gloucestershire Food Procurement Strategy Group asserted: *"Ensors has the potential to be developed as a centre of excellence in meat preparation and supply in Gloucestershire."*

The majority of Gloucestershire butchers interviewed also added value by producing sausages, faggots, burgers; smoked and cured hams; sliced roast meat and barbecue flavourings to meet customer demand. Today, poultry consumption has increased as a consequence of the rise of convenience foods, and ready meals in particular, as it is more suited to this production than other meat. Consequently, a Halal chicken wholesaler based in Gloucester was planning to invest in a cutting unit in order to produce chicken portions.

In summary, meat processing capacity is expanding within the county and this could be utilised to take advantage of the considerable demand for convenience food. This expansion is due to a large and progressive company (Ensors) scaling up operations and other small scale actors achieving organic growth. This expansion could be planned in ways that provide a more secure customer base for local meat producers.

3.3 Dairy

The UK milk market is mature and there has been consolidation of both processors and at the farm level. Gloucestershire matched the South West region's fall of 4.6% in the number of dairy producers between February and December in 2005. Only 267 dairy producers remained in Gloucestershire by the end of the year. There are a number of major dairy manufacturers based in Gloucestershire. Dairy Crest and Cotteswold Dairy are the main milk processors in the county.

Table 4 Major Dairy Processors in and around Gloucestershire

Company	Location	Turnover £000	Year
Dairy Crest	Severnside, Stonehouse, Gloucestershire	1,260,000	2005
Cotteswold	Tewkesbury, Gloucestershire	19,042	2004
Westbury – Joint venture between the 3 major farmer owned co-operatives, dairy Farmers of Britain, Milk Link, First Milk	Westbury, Wiltshire	Not known	
Alvis Brothers	Lye Cross Farm, Bristol	15,249	2004
Yeo Valley	Bridgwater, Somerset	26,349	2004
Robert Wiseman	Droitwich, Worcester	489,168	2005
Milk Link	Staplemead, Frome, Somerset	651,139	2005

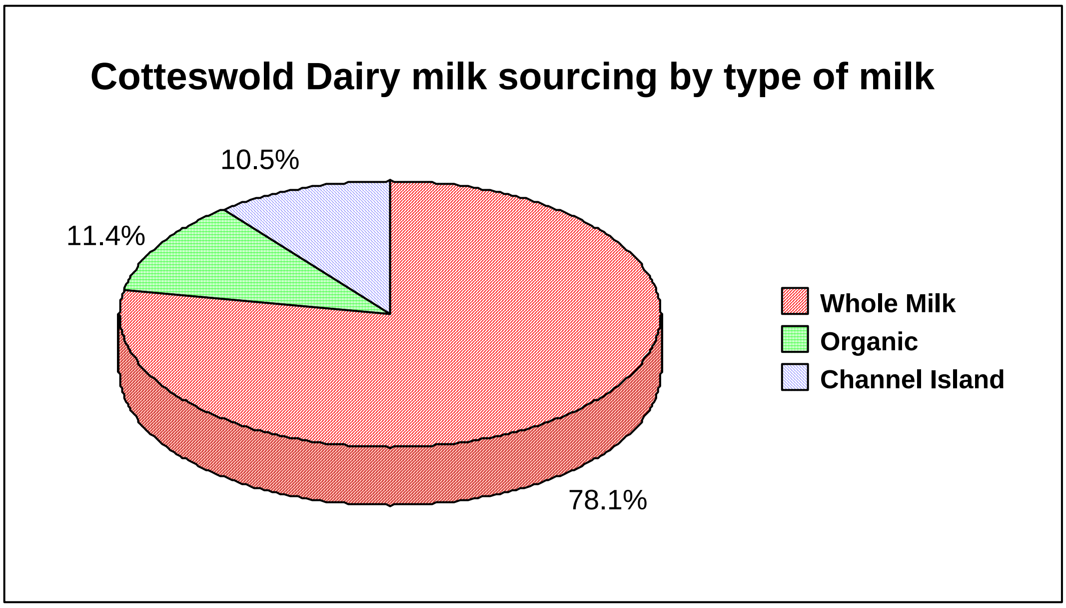
Source: Milk Development Council

All produce from Dairy Crest, apart from milk, goes to their depot in Nuneaton. Although 109 of the 1,600 farmers supplying Dairy Crest with milk were based in Gloucestershire (supplying around 20% of the annual milk volume processed at the supercreamery in Severnside), their supply is not separated and therefore cannot be tracked. Anecdotally, some Dairy Crest milk goes to depots in west London, whilst Hyde Farm milk (a local producer bought by Dairy Crest) goes to local businesses. Dairy Crest jointly owns a bottling factory with Cotteswold Dairy in Tewkesbury.

Cotteswold, a family owned liquid processor, employs 170 people, but at present just operate one shift, from 6am-4pm 6 days a week. This means that there is the potential to increase production e.g. to 24 hour production to supply local demand. The recent installation of a new poly-bottling line has increased production capacity and Cotteswold processes on average 115,000 litres of Channel Island milk (from

Milk Link), ordinary milk and organic milk each day (on average 684,000 litres per week).

The majority of the milk is collected from local dairy farms using Cotteswold's own tankers. Organic milk is sourced locally from two farms (in Gloucestershire and Worcestershire) and processed for whole, semi-skimmed, skimmed milk and cream. Their range of organic products includes: bread, butter, yoghurt, cheeses and eggs.



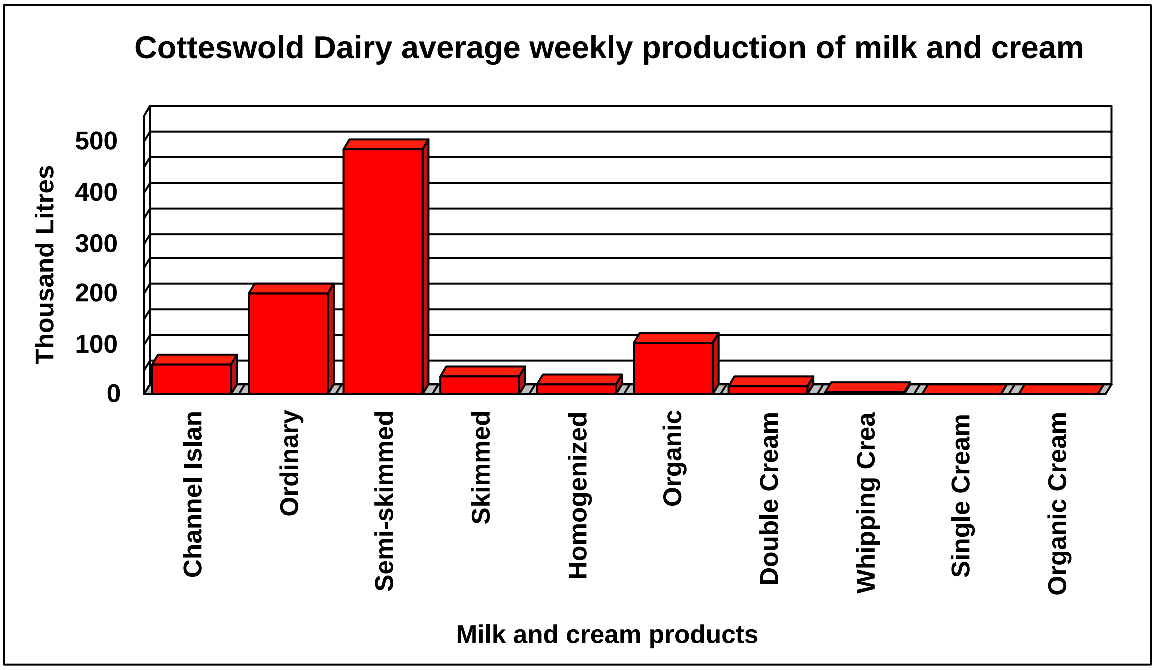
The volume of organic milk sold in the 52 weeks ending 4 December 2005 has increased by 64% in the UK on the previous year (MDC Datum, 2006). As a result of this significant increase in demand, there is concern that production may struggle to meet it. Demand in the UK for organic milk currently exceeds supply, reflected in increases in farm-gate prices over the winter of 2005/6. This all provides an incentive and opportunity for more dairy farms in the county to convert to organic production, and existing organic producers in Gloucestershire to scale-up operations.

Cotteswold also offer locally sourced goat's milk, fresh orange juice, fruit juices and flavoured water. In recent years there has been a growth in demand for healthier foods (EFFP, 2005) and this includes branded milks. In 2004 sales of branded liquid milks rose by 23% compared with 2003 (Mintel) and branded milks now account for over 9% of the total market (i.e. retail, middle-ground and doorstep markets excluding milk for manufacture or foodservice) (MDC Datum, 2006). Fresh pasteurised semi-skimmed goat's milk is currently selling at £1.26p p/litre compared with circa 55p a litre for ordinary milk. Therefore, this product also provides a revenue-generating opportunity (The Times, 2006). There is already one goat's milk producer in the

Forest of Dean, and local capacity could be enhanced further, as a farmer at Bradley Farm (Mitcheldean) has applied for planning permission for a shed to house 800-900 goats. These would be straw housed, and fed on silage, and arable crops (abundant in Gloucestershire) and produce 450 gallons of milk a day, which could potentially supply the local market.

Some 28 Gloucestershire dairy farmers and 7 farmers from Worcestershire supply milk to Cotteswold. In total around 90,000 customers, comprising households, shops, garages, restaurants, rest homes and other independent dairies, are supplied with Cotteswold dairy products daily. Doorstep milk deliveries are made to households in Tewkesbury (around 12,734 litres per week), Malvern, Cheltenham (circa 38,000 litres per week), Winchcombe and surrounding areas. Cotteswold also provide sectors of the catering trade e.g. shops and garages, with a delivery of 'morning' goods i.e. milk, bread, eggs, cream etc and catering packs e.g. milk, cream and butter portions, 6 days a week. The deliveries are made by refrigerated 7.5 tonne vehicles in a 50 mile radius of Tewkesbury. South West Food and Drink facilitated Yeo Valley, a yoghurt maker based in North Somerset, to use its nationwide delivery network to help small organic producers distribute their products. Cotteswold could help other smaller producers to distribute their product in the county, if a similar agreement can be brokered. Small-scale milk and cream production is also carried out by Daybreak Dairies, Daylesford Creamery and Bishops Cleeve Dairy suggesting a more co-ordinated operation could be investigated.

Cotteswold Dairy produces circa 940,000 litres of milk a week (48.9 million litres per annum) around half of which is semi-skimmed, and almost 28,500 litres of cream a week (just under 1.5 million litres per annum).



Extrapolating from the national Expenditure & Food Survey (Defra, 2004/5) it was estimated that Gloucestershire's population consumed around 48.2 million litres of liquid milk in 2004 and Cotteswold Dairy produce circa 48.9 million litres of milk per annum. So although Cotteswold distribute outside Gloucestershire as well, taking into account other local producers, as the Gloucestershire Food Procurement Strategy Group (2004) suggested, the county is potentially self-sufficient in milk. Cotteswold produce nearly 1.5 million litres of cream per year and it was estimated that Gloucestershire's population consumed around 566,000 litres of cream per annum, so Gloucestershire is more than self-sufficient in cream.

Between 2000 and 2005 the use of milk to make cheese increased significantly (15.6%) reflecting the growth in cheese sales (Defra). Around 38,000 litres of Cotteswold pasteurised milk is sent each week to two large commercial cheese-makers, located in Gloucestershire and Worcestershire. However, numerous small and medium scale cheese producers are thriving in Gloucestershire and use a variety of routes to market including farmers' markets, farm shops, specialist retailers, delicatessen, butchers, and major multiples. For example, Simon Weaver Cotswold Organic Dairy (Stow-on-the-Wold) won two Taste of the West – Food and Drink Awards in 2005, including a Gold award for its Cotswold Brie and is promoted locally at outlets like the Chesterton Farm Shop (Cirencester), and more widely at events like the BBC Good Food Summer Festival (Birmingham) and the Restaurant Show (London). Godsell's cheese is made in Leonard Stanley using pasteurised milk from 400 home bred cows and is included in the Midcounties Co-op's Local Harvest range. Cerney Cheese produce handmade goats cheese; and Charles Martell of Dymock makes ‘Stinking Bishop’. Although working seven days a week to produce more Stinking Bishop, the cheesemakers were still only meeting between 20 and 30% of the orders that came in 2005, following the Wallace and Gromit film’s release. Ice cream is also produced on a medium scale by Winstone Ice cream (Stroud); and on a small scale by Tartaglias (Gloucester). Winstone’s have national distribution, supplying both retail catering and wholesalers and have combined with local company Bottlegreen (35 employees) to provide a new range of sorbets. This is an example of two small local food companies working together in the county, enabling each to diversify into new markets. Similar marketing arrangements could be more actively investigated.

In recent years, the British Cheese Awards with around 10,000 visitors (including tourists as Gloucestershire First highlighted) have been held annually in September in Cheltenham, and Gloucestershire cheese makers have picked up more awards than any other county (Gloucestershire Echo, 2005). This is robust confirmation that events like this, and the Tewkesbury Festival of Food and Drink, provide a valuable and often unique opportunity for local producers to promote their products directly to local consumers and local catering businesses.

In 2005 Business Link funded local cheesemakers getting together to enable sharing ideas and marketing strategies. This is a first step towards Gloucestershire Food Procurement Group’s recommendation to establish better co-ordinated sector groups within Gloucestershire. It should perhaps aim to eventually emulate the Green Grocer Initiative, where producers working within product clusters in the county collaborate to deliver a high quality product range and continuity of supply, with seasonality re-introduced as a valued concept.

4 Food Service Businesses

4.1 Wider evidence

Between 1999 and 2003, UK restaurant sector (including cafés) sales by value increased by 20%; public houses sales increases by nearly 28%; and contract catering and food service management sales by around 25% (Keynote, 2004). The UK hotel sector sales by value grew less at around 7%, but hotels are more reliant on tourism and business bookings than other catering establishments, and were especially affected by the terrorist attack of 11th September 2001 as well as the Foot and Mouth Disease epidemic.

Table 5 Expenditure on eating out and household food and drink (£/person/week)

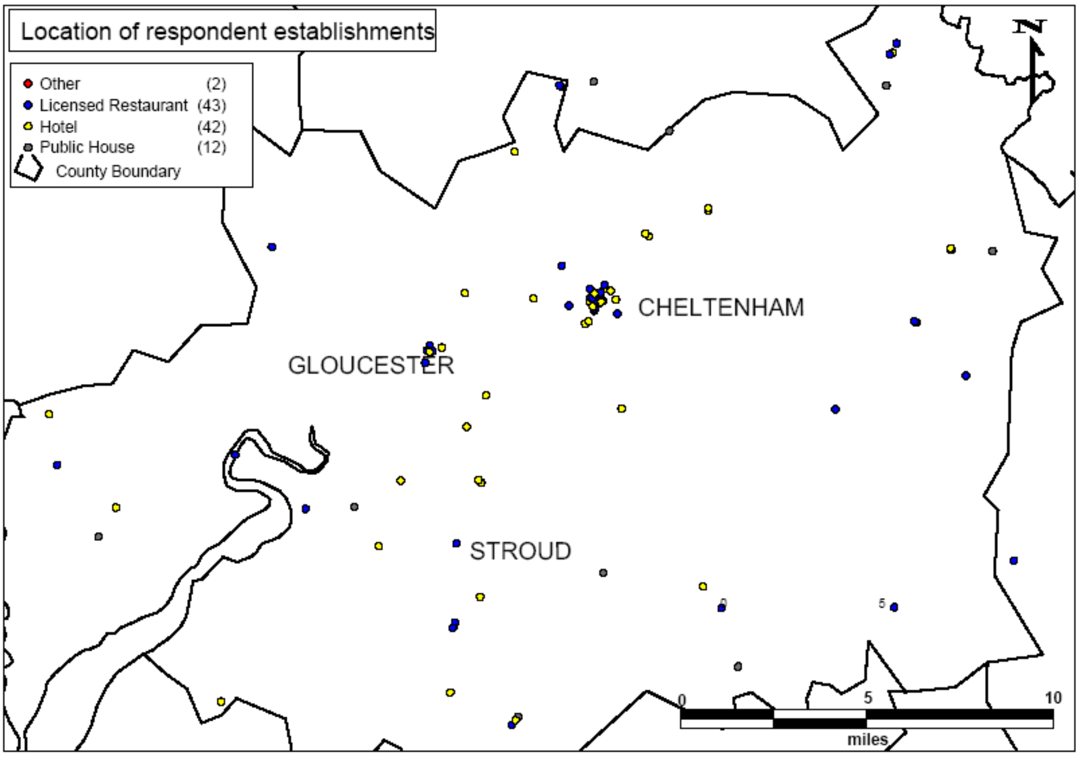
	2001-02	2004-5	% increase 2001-2005
Food & drink eaten out excluding alcohol	6.98	7.72	+10.6
Household food and drink excluding alcohol	19.08	20.39	+6.87
Total	26.06	28.11	+7.87

Source: Defra (2005) Expenditure & Food Survey; December; relative standard error <2.5%

Overall household expenditure on eating out went up by 10.6% between 2001-2005, partly due to an increase in disposable income and social trends, and this growth is being sustained. The growth in eating out and convenience foods (EFFP, 2005) has led to food service businesses becoming as important for processors and manufacturers as supermarkets, particularly for cheese (cheddar cheese represents more than 50% of the market). This all suggests a real marketing opportunity for Gloucestershire's restaurant sector.

4.2 Gloucestershire Survey results

The survey of Gloucestershire food service businesses conducted as part of this research (99 respondents) found that around 9 out of every 10 respondents were able to source their food supplies independently. The rest were part of larger chains locked into non-local central purchasing. Around two thirds of restaurants surveyed sourced some local produce, as did 9 out of every 10 hotels, reinforcing Morris and Buller's (2003) findings about the strength of local production in Gloucestershire. The respondents were distributed throughout rural Gloucestershire as well as located in major towns.



The following table indicates the proportion of respondents that sourced some produce directly from Gloucestershire farmers and growers.

Table 6 Food Service Businesses that sourced some produce directly from Gloucestershire farmers/growers

Produce	**Percentage of sample %**
Fruit	20
Vegetables	20+
Potatoes	15
Milk	10+
Other Dairy Produce	20
Poultry	11
Beef	12
Lamb	12
Pork	10

Source: Gloucestershire Food Service Businesses Survey conducted for this research

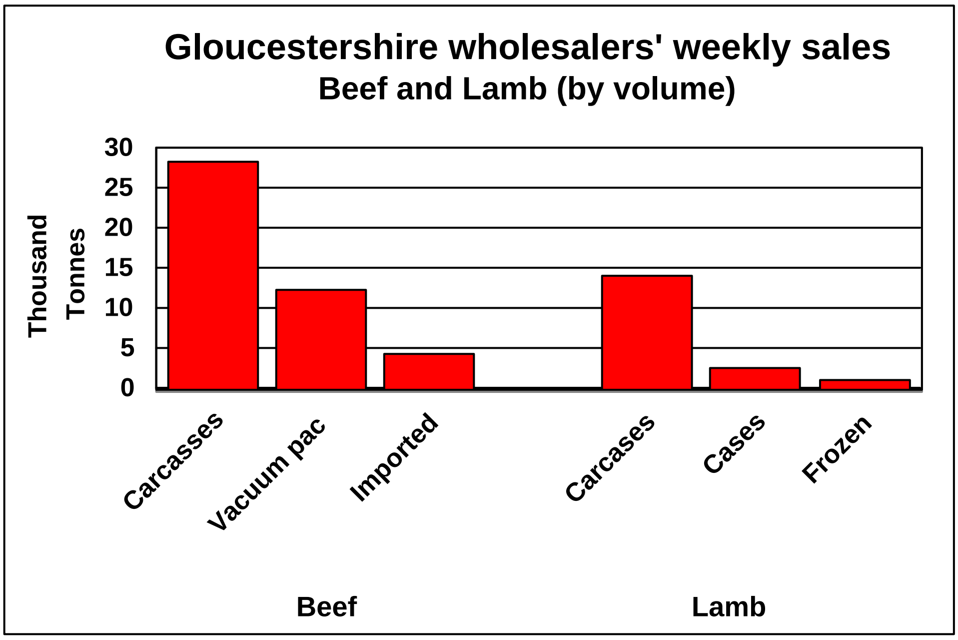
4 out of every 5 survey respondents would like to source more locally produced food, as would 3 out of every 5 restaurants, and 75% of the hotels contacted. Furthermore, over half bought more local produce in 2005 than previously, supporting Gloucestershire First's assertion that there is room for growth in niche markets for fresh foods and speciality products, especially if linked to Gloucestershire's large rural tourist industry. This suggests that there is considerable scope for local producers to expand if they can successfully market their products to new and existing catering outlets as Hoskins (2003) observed, especially as private sector catering is growing.

However, just under half of Gloucestershire Food Service Businesses survey respondents indicated that there was something preventing them sourcing more locally produced food. Barriers identified included: company sourcing policy; insufficient time available to do the sourcing; price; service consistency and trust of current suppliers (i.e. quality, reliability, professionalism and cost effectiveness); lack of produce availability; delivery convenience; the limited storage capacity of small restaurants, making frequent deliveries necessary; and interestingly, the cost of staff time in preparing fresh produce. The latter suggests a lack of training and competency in basic catering skills previously identified by Gloucestershire Food Vision - the ‘Train to Gain’ funding initiative could help to alleviate this. These barriers will need to be addressed if producers are able to take advantage of growth in the catering sector.

One way for local producers to tackle these issues would be to work together in product clusters like the Green Grocer Initiative to ensure sufficient product range and consistency. The development of local food distribution hubs, that help shorten the food supply chain and reduce multiple deliveries, and/or customers having to collect produce, would also be welcomed. Local champions could be identified to help develop these with reference to the particular needs of the local food sector. However, distribution hubs must cover operating costs and who bears these costs may be a difficult issue to resolve. There is also the question of how hub members are bound in and in particular, how to ensure product quality and reliability. Despite funding from Gloucestershire’s Rural Renaissance initiative (Gloucestershire First) and Building on What’s Special (BOWS), and Ensors donating part of their premises, a recent pilot to set up a distribution hub in the Forest of Dean has not progressed; whilst an initiative in Yorkshire supported by Defra to deliver fresh produce to restaurants and pubs via a fleet of white vans failed because producers eventually cut out the hub and dealt direct. Gathering the lessons learnt from these operations would be invaluable. For a hub to be sustainable, it must overcome potential problems such as these, as the Green Grocer Initiative has done, and ultimately offer a more cost effective solution than the next best alternative. One alternative would be a retail outlet sited in Cheltenham to ensure adequate customer footfall and manageable overheads, that offered a limited product range featuring Gloucestershire’s finest food and drink sourced from the more inaccessible producers in the county; a delivery service for the catering trade could also be offered.

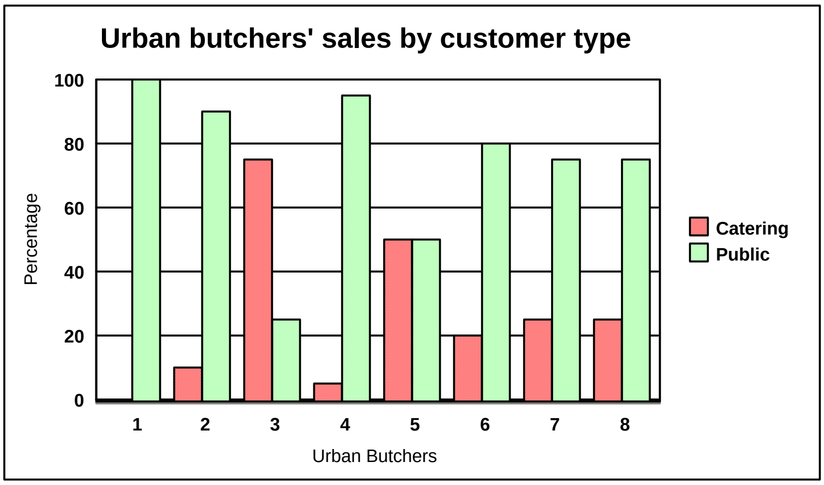
A group of Bed and Breakfast establishments in the Cotswolds now source all their breakfast ingredients from local farmers and producers in the Cotswolds, enabling them to provide and promote the 'Cotswold breakfast'. This is a practical illustration of the opportunities presented by rural tourism that Gloucestershire First highlighted. This partnership could be replicated elsewhere in Gloucestershire, for example in Cheltenham (especially during the National Hunt Racing Festival – with 150,000 visitors annually - and other festivals), the Forest of Dean and around Stroud.

Caterers want primal meat cuts, and as butchers are increasingly unable to afford the skilled labour to bone carcasses, butchers are predominantly buying primal cuts in boxes from meat wholesalers. However, much of this meat may be imported.



> *"For catering we require the meat to be partially butchered e.g. topside boned and ready for use. If I went to the local abattoir I would have to buy ¼ of an animal and a lot that they [the caterers], don't want; so I buy legs of lamb instead from wholesalers."* And consequently *"caterers tend to use foreign meat because of price from Brazil, Argentina, Botswana, New Zealand, Australia."* (Gloucestershire butcher)

This is particularly the case with beef, which makes up around half of all meat sales. This strongly suggests a significant opportunity to supply local customers with local produce. Generally, rural butchers were found to be more reliant on catering sales than urban butchers, because they are further from major centres of population.



Between them, 13 Gloucestershire butchers supplied 176 catering establishments, comprising: hotels, restaurants, public houses, care homes, schools and a private canteen. This catering custom, in rural areas in particular, may be the difference between insolvency and survival for many butchers. However, supply is uncoordinated and piecemeal. It is also fairly fragile, for example chefs may move elsewhere with little notice and the custom is invariably lost. New chefs are either not aware of the local supply available, or prefer to use favourite suppliers from their previous employment. Consequently, rural butchers, need to develop effective marketing programmes for catering clients to ensure continuity.

5 Conclusions

This study has examined production levels of three main product groups in Gloucestershire, and the potential demand for local produce in the county, in order to provide a clearer picture of how food supplies are sourced within Gloucestershire and to suggest how local food chains could be improved. A key aim of the study was to evaluate the potential for building a local food economy in the county and the extent to which the production, marketing and consumption of local food in the county could be developed.

A critical finding was that there are important gaps in countywide data for livestock production and consumption. It became apparent that only by asking livestock producers directly, and by checking individual livestock 'passports', would it be possible to find out how much livestock is truly local i.e. raised, slaughtered and consumed in the county, rather than just being 'finished' within Gloucestershire. This research would be difficult and laborious to undertake. Nevertheless, it could become necessary in the future to satisfy consumers' concerns about 'transparency', as well as enabling calculation of the proportion of livestock in Gloucestershire of local origin. This finding also highlighted the inability of current systems of data collection to provide information to guide more sustainable policy development and delivery, as advocated by the Curry Report (Defra 2002a).

The main findings of this research support Gloucestershire First's belief that there is considerable room for growth in niche markets for fresh foods and speciality products in Gloucestershire. Meat and dairy production volumes and processing capacity in Gloucestershire could support local value-added food chain development. However, current fruit and vegetable production, except for potatoes, would not. There is an opportunity to develop local potato sales within small shops and petrol forecourts, in 25kg bags. Small fruit growing is expanding in the county and hotter summers may encourage more farmers to consider this option. Producer research to establish how and where Gloucestershire's small fruit is being sold, and to assess if the market growth is sustainable, would be necessary to identify the full market potential.

The results of the study' surveys and interviews strongly indicate that demand for local produce is high in the county along the entire food supply chain, e.g. by butchers, wholesalers, food service businesses and even the major multiples like Asda, Somerfield and the Mid-counties Cooperative. Stokes, the independent green grocer chain, found that listing the local grower's name with the produce does differentiate the product and boost sales, as (local) provenance is increasingly valued by customers (EFFP, 2005). Gloucestershire butchers similarly found that displaying local provenance increased their sales. Demand for organic produce is burgeoning and organic production capacity within the county has been expanding, but the conversion process to achieve organic status is relatively slow. Nevertheless, there is an opportunity for more growers and farmers to meet the supply shortfall, especially for organic milk and organic vegetables.

Direct sales of meat to the consumer, although currently small, are increasing via the expansion of farm shops, farmers' markets and home delivery, which presents a profitable and growing opportunity for producers. However, as Buller and Morris (2003) concluded, these alternative food supply chains can create 'competitive localism'. This was evident, wherein some butchers were not able to source as much local meat as they would have liked to supply catering customers, at a time when catering demand in the county is booming. Rural butchers, in particular, were dependent on catering sales for their survival. However, this local market is not secure as they have mostly been unable to retain catering custom once the client's head chef moves away. Greater security could be secured through provision of marketing training and better co-ordinated sourcing and supply via local hubs. Demand is also changing as caterers are requesting more primal meat cuts for convenience. This is having an impact along the supply chain. Ensors in Cinderford are well placed, with both the skills set and extra processing capacity, to meet this demand, as well as rising demand for kitchen-ready products. As the Gloucestershire Food Procurement Strategy Group (2004) highlighted, Ensors provide an opportunity for collaborative activity with producers and caterers across Gloucestershire. Chilled, ready-made meals and sandwiches are also growth markets for local producers as consumers seek greater convenience. The success of local businesses in addressing this need, like Simple Suppers and Frocester Fayre, could be replicated elsewhere in the county.

Cotteswold dairy in Tewkesbury sources around 90% of their milk locally, including organic milk, and distributes processed milk, other dairy and locally sourced non-dairy products throughout Gloucestershire. Cotteswold have the capacity to increase production to supply local demand and could help other small producers to distribute their product in the county via their fleet of refrigerated vehicles. This all suggests that there are adequate dairy and meat processing facilities in Gloucestershire to re-localise the food supply chain, as Saltmarsh and Wakeman (2004) indicated. The Business Link funded 'cheesemaker' group for sharing ideas and marketing strategies is a model that could be replicated by other food sectors in

Gloucestershire, effectively by forming mini-clusters. This would encourage essential co-ordination, diversification where appropriate, as well as enabling exchange of best practice and marketing ideas. The Rural Enterprise Gateway farmer groups in the county could also be targeted with skills training. For example, local producers using alternative sales routes via the farm gate and home delivery, especially for meats, need training to promote themselves more effectively. This could be addressed by Gloucestershire Food Vision facilitating skills workshops, such as the procurement workshop they offered buyers in July 2006.

If more partnerships, like the one between Bottlegreen and Winstones (ice cream), can be facilitated within the county (combining resources to produce sorbets), it will enable local producers to diversify and access new markets. Gloucestershire Food Vision is well placed to promote market opportunities to growers/farmers e.g. matching producers with outlets to exploit growth in demand for organic produce, such as milk; and co-ordinating the fragmented local game supply for butchers. In addition, there are home delivery services of varying scale that local producers could link up with and supply, such as Slipstream Organics and Local Direct, and Ensor's who are seeking to diversify and add local vegetables and other non-meat produce to their home delivery service.

The majority of Food Service Businesses in the county were keen to source more local produce providing local producers with an opportunity to expand their businesses. However, this will only become a reality if the perceived barriers between caterers and local suppliers can be resolved. As Saltmarsh and Wakeman (2004) noted, improving communication across the supply chain is necessary to re-localise the supply chain. This would encourage more effective partnership working and help build trust. Chefs who are new to the area could be offered a consultation session with Gloucestershire Food Vision to enable them to develop menus around local seasonal sourcing opportunities. Catering establishments could promote local produce menus to differentiate themselves from the competition.

Many Gloucestershire butchers and some green grocers were operating piecemeal supply and delivery services for the catering and public sectors. Co-ordinating supply would enable more sustainable and effective operations. Local branding could be developed, based around each market town (e.g. 'Cirencester fresh and local') to capitalise on a more local image, as Gloucestershire First highlighted. This would provide differentiation for catering establishments serving tourists and business clients. However, efficient local distribution infrastructure is lacking, but it is an essential requirement for re-localising the food supply chain (Saltmarsh and

Wakeman, 2004). The development of a distribution infrastructure that enables producers and customers to connect is crucial. There is latent demand for joining up local producers with the private catering sector. The Green Grocer Initiative in Warwickshire and Worcestershire (a distribution hub) could be replicated in Gloucestershire, or on a smaller scale local distribution hubs focused on Gloucestershire market towns and their hinterlands could be developed. These hubs would draw together local suppliers. For example, primary food producers like vegetable growers, and secondary producers such as butchers. The hub could offer local catering businesses a single ordering, delivery and invoicing point for the product portfolio put together by local suppliers. This would require suitable premises, Internet-based ordering systems, and a delivery fleet able to deliver chilled as well as ambient produce. The development of local food distribution hubs that shorten the food supply chain and reduce multiple deliveries, and/or customers having to collect, would be welcomed by food service businesses. However, there may be significant logistical glitches to overcome and issues to resolve, such as who bears the cost of operating the hub, before a hub becomes a viable option. To help address these potential problems local champions could be identified to assist with the development of these hubs to meet particular needs in different localities. One alternative to food hubs would be to re-introduce edge of town markets to cater for specific customers including retailers, wholesalers and catering outlets like restaurants.

In Gloucestershire there is evidence of hybridisation and synergy among the three families of food supply chains identified by Saltmarsh and Wakeman (2004). Mainstream food supply chains are reaching out, in particular several of the major multiples (Sainsbury’s and Tesco) are piloting organic vegetable box schemes and most major multiples now source local produce for regional distribution, such as the Mid-counties Co-operative ‘Local Harvest’ range in Gloucestershire. Some Gloucestershire butchers are adapting by making additional sales via the Internet such as The Country Butcher (Huntley). Other butchers are collaborating with local farmers, like Gurney's (Newent) and Over Farm, to supply high quality, local meat that is slaughtered within Gloucestershire, thereby keeping food miles between the producer and the customer to a minimum and ensuring traceability. Ensors, originally solely a slaughterhouse, has branched out into food service and home delivery with an expanding catering pack line facility and a growing range of value added products; they are also looking to include vegetables along with their growing organic meat box scheme. On a smaller scale Local Direct has recently set up to offer home delivery of local organic food and other household staples in the Gloucester and Stroud Districts, customers can order via telephone or via the Internet. Frocester Fayre, a mixed farm that converted a dairy into a cutting area, now market homemade ready-to-eat meals and sell produce direct to the consumer via their farm shop, farmers' markets and their home delivery service, they also supply retailers and caterers. In conclusion, these examples illustrate that there is scope for hybridisation within Gloucestershire's three food supply chain families and opportunities to benefit from synergy.

Table 7 Food Supply Chain 'families' in Gloucestershire

	Mainstream	**Traditional**	**Alternative**
Examples	Supermarket Food Branded Products	Wholesale Markets (Gloucester closed August 2005) Specialist Food Outlets Local Shops	Farmers' Markets Farm Shops Box Schemes
Share of the market and trend	High (around 80%) Continued Growth as elsewhere in the UK Major multiples are sourcing local produce for regional distribution and also reaching out, piloting organic vegetable box schemes	Low (around 15%) Declining as elsewhere in the UK Relatively weak, but some hybridisation e.g. butchers collaborating with farmers, farmers' markets and developing Internet sales	Very Low (<2%?) Growing as elsewhere in the UK Vibrant with many established farmers' markets, increasing direct sales e.g. from farm shops and developing box schemes and home delivery services
Logistics (Food)	Integrated & efficient	Fragmented	Piecemeal
Retail & Catering	Multiple retailers Chain caterers	Traditional shops Independent & Local	Direct Sales Home Delivery
Geographical Length	Long	Medium	Short
Source: After Saltmarsh & Wakeman, (2004)			

Finally, a comparison of the local food supply chain ecological footprint to that of imported produce e.g. meat, is worth exploring, and then incorporating the results in local food marketing strategies. The rising consumption of organic and 'artisan' foods, like local specialist cheeses, and the rising popularity of farmers' markets and farm shops, suggest local consumers would respond well to such strategies.

6 Recommendations

It is recommended that an in-depth survey of fruit and vegetable growers be carried out to establish production levels and identify opportunities for growers in the future. Matching the results with geographically segmented demand (e.g. local food service businesses), would enable growers to identify future marketing opportunities. This would help to determine how more produce could be economically and more sustainably grown for local markets.

A survey of Gloucestershire's farm shops and other direct retailing outlets would provide valuable baseline data for one of the county's fast growing alternative local retail routes. It would also help to estimate the size of this element of the local food sector.

Research into best practice across farmers' markets in the UK could be used to enhance the effectiveness of Gloucestershire's burgeoning farmers' markets. An in-depth county-wide survey of stallholders in Gloucestershire would help to determine the volume and value of produce sold via the farmers' markets in Gloucestershire and the potential for further development. It would also be valuable to identify issues and opportunities for stallholders and managers of farmers' markets, that could subsequently be addressed right across the county.

Finally, options for identifying and tracking the flow of local and finished livestock in and out of the county should be investigated. Firstly, to aid data collection in the future and to support the Food Chain Centre's objective of mapping and measuring the food chain and improving efficiency (Defra 2002b), and secondly to enhance 'transparency', which is becoming ever more important to the consumer, reflecting Don Curry's plea to reconnect the food chain with its customers (Defra 2002a).

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