

The State of Composting in the UK

2003/2004





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Report prepared and written by:

Rachel Slater (The Open University)
Peter Davies and E. Jane Gilbert
(The Composting Association)

Acknowledgements:

Anne-Marie Bremner, Julian Parfitt and Anne O'Brien
(Waste and Resources Action Programme)
Nina Sweet (Environment Agency)

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Executive summary

The Composting Association has conducted surveys assessing the State of Composting in the UK since 1994. They provide important and detailed information on industry trends and areas of growth, and help highlight areas for future policy development. The production of this survey was made possible by the financial support of the Environment Agency and the Waste Resources Action Programme.

The survey results are important in assessing the industry's role and contribution to a number of recent policy developments aimed at managing biodegradable wastes more sustainably. The Waste and Emissions Trading (WET) Act 2003 and the Landfill Allowance Trading Scheme (LATS) introduce progressively tighter restrictions on the amount of biodegradable wastes that authorities can landfill, designed to meet the Landfill Directive (EC/31/99) targets. In addition, varying recycling and composting targets are set out in the respective Waste Strategies for England, Northern Ireland, Scotland and Wales, and the Household Waste Recycling Act 2003 has come into force in England.

This survey was carried out in 2004, and covered the financial year April 2003 to March 2004. Data were collected from compost producers and local authorities by means of either a postal or electronic (e-mail) questionnaire. The questionnaire sent to local authorities covered organic waste collected from household waste recycling centres and kerbside recycling schemes. The questionnaire sent to compost producers sought data on organic waste types and quantities, facility and process types, together with product and market information. The survey was distributed to a total of 474 local authorities and 410 compost producers and attained an overall response rate of 43 %.

The responses obtained suggest that the industry has continued to show sustained growth. Since the previous survey for 2001/02 the total number of sites has increased by 49 % from 218 to 325 in 2003/04, and the total quantity of wastes composted has increased by just under 20 %, from 1.66 million tonnes (Mt) to 1.97 Mt in 2003/04, a growth of 0.31 Mt. This equates to an average annual growth rate in the number of sites of 22 %, and an average annual growth rate in throughput of 10 %.

Compared with previous years, the growth rate in number of sites has increased whilst the growth rate in throughput has decreased. This is explained by the development of on-farm composting through a relatively large increase in small-scale on-farm sites compared with centralised sites. The number of on-farm composting sites recorded more than doubled, whilst the number of centralised sites increased by 5 %. As a proportion of the total, wastes composted at centralised sites fell from 92 % in 2001/02 to 87 % in 2003/04, the result of the greater rate of growth in on-farm composting (up from 8 to 13 %). Wastes composted at on-farm sites roughly doubled from 0.13 Mt to 0.25 Mt. Analysis of the 0.31 Mt increase in additional wastes composted since 2001/02 survey shows that the expansion of existing sites accounted for around 50 % of additional processing capacity, whilst new on-farm sites accounted for around 35 %, with new centralised sites contributing the remainder.

The UK composting industry was dominated by two main types of operator: 'dedicated compost producers' (organisations whose primary activity is compost production), and 'waste management companies' (organisations involved in a range of waste management activities that also operate composting sites). Collectively these two types of operator processed 95 % of wastes composted at centralised sites. Agricultural organisations (individuals or organisations involved in farming, or linked to agricultural activity) processed 85 % of wastes composted at on-farm sites. The pattern of centralised site ownership was relatively constant with previous years. Most dedicated compost producers operated a single larger-scale site (with typical annual throughput of between 5,000-10,000 tonnes). In contrast, waste management companies tended to operate multiple, smaller-scale sites (typical annual throughput of between 2,000-5,000 tonnes). Most agricultural organisations operated small-scale on-farm sites (typical annual throughput of <1,000 tonnes) and tended to be single site operators, or one operator co-ordinating activity at multiple sites (typically more than six sites). Whilst the growth in the on-farm sector is an

important development for the industry, the proliferation of small centralised and on-farm sites needs to be complemented with the development of larger-scale sites if the industry is to provide processing capacity that will significantly contribute to the Landfill Directive targets.

Although there were large geographical variations in the quantity of wastes composted in the UK, these were relative to the population on a per capita basis, with quantities composted per household similar across England, Northern Ireland, Scotland and Wales (giving national figures ranging from 71-80 kg per household per annum). As would be expected the largest increase in wastes composted was observed in England. However the larger rate of growth was observed in Scotland and Wales. Organic wastes processed in Scotland tripled, and in Wales it more than doubled. As in previous surveys the data showed that Wales and Scotland processed a greater proportion at on-farm sites compared to England, although in Scotland this proportion remained relatively static since the last survey, whilst in Wales the proportion of wastes composted on-farm increased. The report showed that a divide still existed between the North and the South of England, with approximately one-third more material per household being composted in the South.

The compost producers were asked to provide information on the source of wastes they composted, which included household wastes collected from Household Waste Recycling Centres (HWRC) and the kerbside. Data supplied by compost producers tallied well with local authority data on wastes they collected for composting from HWRC and kerbside schemes. According to compost producers 1.44 Mt of household wastes were composted in the UK in 2003/04, and according to local authorities, 1.36 Mt of household wastes were collected for composting. As in previous years HWRC continued to be the main collection method, accounting for around three quarters of household waste composted. However, the dynamics between HWRC and kerbside collection options are beginning to change. The quantity collected from HWRC remained similar to that reported in 2001/02, whereas the quantity of green waste collected from the kerbside had more than doubled. In 2001/02 kerbside collection accounted for around 14 % of household wastes composted, by 2003/04 this had increased to 29 %. Growth in kerbside collections of green waste by the schemes recorded in this survey is expected to continue, as over half of schemes had been in operation for only part of the survey period. Of the 1.97 Mt of wastes composted, 73 % was household waste, 4 % municipal non-household waste and 23 % commercial wastes. To date the industry has been able to sustain growth with a reliance on green waste, which accounted for 95 % of municipal wastes composted, and virtually all household wastes composted. Despite considerable and sustained growth, only approximately one-fifth of the estimated 7 Mt of household garden waste arising in the UK in 2003/04 were composted by the industry, whilst the estimated 6 Mt of kitchen wastes remained a largely untapped resource.

Given that the industry continued to rely on green wastes for composting, it follows that open-air mechanically turned windrows remained the most common processing technology used at both centralised and on-farm sites. This relatively low technology method was used at 278 of the 325 sites reported in the survey, accounting for 82 % of wastes composted in 2003/04 (81 % of wastes composted at centralised sites, and 89 % of wastes composted at on-farm sites). As pressure increases to divert both green waste and food waste from landfill, suitable processing technologies capable of handling food waste will be required (such as in-vessel composting systems). There is some evidence to show that is starting to develop, for example the number of sites employing in-vessel technologies increased from 12 in 2001/02 to 18 in 2003/04. This survey coincided with the introduction of The Animal By-Products Regulations 2003, and in the first year of regulation 14 facilities were undergoing validation for the processing of catering (food) wastes by the State Veterinary Service.

Although this expansion into food waste composting is positive, it is still at a very early stage of development, and rapid expansion of food waste composting capacity will be required to contribute to the required landfill diversion targets. This rapid expansion requirement is set against the tension of often lengthy planning permission

and waste management licence approval processes. Developing food waste composting capacity also requires appropriate kerbside collection systems. In 2003/04 most kerbside collection schemes were 'green waste only', with only a tiny fraction of schemes collecting food waste. The characteristics of food wastes differ from green wastes in that they have a greater density and degrade more readily. This has implications for kerbside collection systems, and systems designed to collect garden wastes are unlikely to be the most efficient or effective way of collecting large quantities of food wastes.

There were 83 sites recorded in the survey whose products complied with at least one independently certified composting standard. The two most common standards were the British Standards Institution (2002) Publicly Available Specification for Composted Materials (PAS100) and The Soil Association Standards for Organic Food and Farming. Overall, sites that complied with at least one independently certified standard accounted for 45 % of all wastes composted.

The survey reported 1.2 Mt of compost product produced, of which, the largest fraction was soil conditioner (61 %), followed by mulches (16 %). Other fractions including growing media constituent and ingredients in manufactured topsoil, whilst turf dressings accounted for the remainder (23 %). This breakdown of product types was similar to that observed in 2001/02. The majority of compost product was used on-site, which increased from 39 % in 2001/02 to 50 % in 2003/04. The proportion of product sold fell from 47 % in 2001/02 to 40 % in 2003/04 (although actual quantity sold increased from 0.45 Mt to 0.48 Mt) and the proportion distributed without charge fell from 14 % to 10 %. Composted product used 'on-site' mainly referred to use on-farms or for landfill engineering (including landfill cover). The use of material in landfill engineering fell by 18 % between 2001/02 and 2003/04, and hence most of the growth in on-site use resulted from composting on farms.

Compost products were distributed to several markets. Agriculture was both the largest and the fastest growing outlet. Around 40 % of composted product went to agriculture in 2003/04, and the quantity used in agriculture increased from 0.29 Mt in 2001/02 to 0.48 Mt in 2003/04 (67 % increase). Landfill engineering and land restoration combined used 24 % of wastes composted in 2003/04, whilst the remainder (36 %) was distributed between horticulture, amateur gardening, landscaping and grounds maintenance.

Results from The Composting Association surveys have shown that over the last ten years the UK composting industry has grown considerably. However, compared to previous years the growth rate in annual throughput from 2001/02 to 2003/04 had decreased while the growth rate in the number of sites had increased. In order to meet the challenges ahead not only does the industry need to sustain this growth, it needs to expand the rate of growth observed over the last two years, and it needs to develop its capacity to process both the green waste and food waste fractions. A considerable growth in small, dispersed facilities was observed during 2003/04, which is beneficial as they enable the treatment of waste near to where it is produced. This growth needs to be complemented by the development of large-scale facilities that are able to treat more difficult and greater quantities of feedstocks. The costs of food wastes treatment are affected by increased legislative demands and the necessity of in-vessel technologies. The capital investment required (and on-going operational costs) can only be justified to finance lenders, if there is a guaranteed, long-term supply of large quantities of organic wastes, and end-uses for the composted product. Inevitably, diverting difficult municipal feedstocks from landfill will necessitate larger facilities, which will require the support of the planning authorities and regulators, coupled with more local authorities providing appropriate kerbside collection facilities.



The UK composting industry continues to grow year-on-year, and over the last decade the capacity for composting green waste has increased substantially. Much of this growth is a result of increased pressure for change in the way waste is managed, requiring a shift away from disposal and towards resource management, with increased recycling and composting activity a key feature. This section outlines some of the recent policy developments relevant to organic wastes.

1.1 EU Landfill Directive and the UK Landfill Allowance Trading Scheme (LATS)

Over the last few years European legislation has become the key driver for national and regional policy. The targets for diverting biodegradable municipal waste from landfill set out in the European Landfill Directive (EC/31/1999) have led to significant developments. The Waste and Emissions Trading (WET) Act 2003 provides the framework for the Landfill Allowance Trading Scheme (LATS) designed to meet the diversion targets laid down in Article 5(2) of the Landfill Directive. The UK targets have been divided up between England, Northern Ireland, Scotland and Wales, and the relevant government body in each nation is responsible for dividing the targets between local authorities who manage disposal.

LATS is a market-based mechanism that introduces progressively tighter restrictions on the amount of paper, food and garden waste that authorities can landfill. Local authorities are allocated an annual landfill allowance for municipal biodegradable waste. They are under a duty not to exceed this allowance and face punitive fines for every tonne landfilled above the total amount of allowances they hold. EU fines imposed on the UK for failure to meet the targets will be split between local authorities in direct proportion to their contribution in breaching the targets.

There are some differences in the way LATS Regulations are implemented across the UK. Authorities in England, Scotland and Wales will be able to 'bank' (save unused allowances from one year to use in a future year) and 'borrow' (use some allocation for the following year in advance), but there is no provision for banking under Northern Ireland's scheme. Authorities in England, Northern Ireland and Scotland who have not used their allowance may trade them with another authority, enabling authorities who are unable to meet their targets to purchase allowances from authorities who exceed their targets. However, the scheme in Wales does not permit trading between authorities on the basis that it could encourage councils to put less effort into recycling and composting. The scheme was introduced in Wales in October 2004, and begins in England, Northern Ireland and Scotland in April 2005. Monitoring of the scheme will be carried out by the Environment Agency in England and Wales, the Scottish Environmental Protection Agency in Scotland and the Environment and Heritage Service in Northern Ireland.

There is uncertainty about how LATS will be measured and determining levels of biodegradability of pre-treated wastes prior to landfill. The Environment Agency has issued a consultation on monitoring the diversion of municipal waste from landfill, which focuses on the residues from mechanical and biological treatment (Environment Agency, 2004). The consultation recognises that MBT residues are "unlikely" to meet standards for soil improvers or compost because of contaminants, and says that residues used as landfill cover will contribute to an authority's allowance. If residues are used as "part of a genuine recovery operation" where they provide "agricultural benefit or ecological improvement" under an exemption from waste management licensing then it will contribute to the allowance. The uncertainties around the role of MBT in contributing to LATS targets should become clearer after the consultation process concludes and a response and guidance is issued by the Environment Agency.

LATS is a significant development in UK waste legislation and is the first public authority focused trading system ever introduced. It will become a major driver in the development of composting as an alternative to landfill for biodegradable waste.

1.2 EU Thematic Strategies on Soil Protection and Waste Prevention and Recycling

Waste prevention and recycling is one of the priority areas identified in the EU Sixth Environmental Action Programme, which outlines seven thematic strategies to address priority areas. The two themes likely to be most directly relevant to composting are Soil Protection and Waste Prevention and Recycling.

The EU is moving towards a Thematic Strategy on Soil Protection following the publication of a draft communication (COM 2002, 179). In parallel the Department for Environment, Food and Rural Affairs (DEFRA) have published the First Soil Action Plan for England (DEFRA, 2004), which is complemented by the Environment Agency's report on the State of Soils in England and Wales (EA, 2004a). The aim of these documents is to help improve the protection and management of soils and they should provide direction for the development of the European Strategy for Soil. Work on the strategy will progress via a number of technical groups working on areas identified as threats to soil, including the decline in soil organic matter, soil contamination and erosion. The European Commission's communication towards a Thematic Strategy on Waste Prevention and Recycling (COM 2003, 301) is part of the development of a thematic strategy to identify the most efficient combination of measures and targets necessary to promote more sustainable waste management. Possible policy scenarios are outlined which include material specific targets, emphasis on source segregation, environmental impact vs. weight based approaches, and harmonised standards for recycled and composted products.

As these thematic strategies develop they could have important implications for the UK composting industry, including the way in which organic material is collected and composted, and the way in which composted products are used.

1.3 National initiatives

Besides the introduction of LATS there are a number of national level policy drivers requiring the development of the UK composting industry.

1.3.1 Recycling and composting targets

The devolved nations have each set incremental recovery, recycling and composting targets to improve performance in the management of household waste. The national targets are divided between local authorities depending on individual performance. In England the aim is to achieve a combined recycling and composting rate of 33 % of household waste by 2015, in Wales the target is 40 % recycling and composting of municipal waste by 2010 (with a minimum of 15 % from composting), Scotland have set municipal waste targets of 35 % recycling

and 20 % composting by 2020, and Northern Ireland have set a target for household waste of 25 % recycling and composting by 2010.

In England, individual local authority recycling and composting rates are assessed by the Audit Commission through best value performance indicators, and the definition of composting under the indicators has been amended to include anaerobic digestion. Although England as a whole met its interim target of 17 % recycling / composting by 2003/04, the picture is mixed at an individual authority level, with one in four councils failing to meet their individual targets.

Scotland are using a standards based approach whereby PAS 100 accredited composted material is considered to be 'compost' and has set longer-term targets for segregated collections of organic waste. Stabilised organics derived from mixed wastes will still be considered a waste and its further use is regarded as recovery rather than composting. Wales have also adopted a source segregation approach and only separately collected organic wastes qualify towards their composting targets.

Against this backdrop of waste strategy targets, the Household Waste Recycling Act (2003) requires all local authorities in England to provide kerbside collections for all householders for a minimum of two materials by 2010. Under the Act kerbside collections of food waste as well as green waste will count as a type or recyclable (providing the waste collection authority does not levy a charge for green waste collections).

These national targets aim to push waste further up the waste management hierarchy. Whilst improving the performance levels for dry recyclables will continue to be important for authorities, the introduction of LATS together with the 'composting' element of the waste strategy targets is likely to focus efforts on biodegradable municipal wastes.

1.3.2 Composting facilities and the Animal By-Products Regulations

To date, expansion of the composting industry has relied predominantly on garden waste. In order to meet the targets for the diversion of biodegradable municipal waste from landfill, substantial additional processing capacity will be required that is capable of composting food waste as well as the garden waste elements of the household waste stream.

The EU Animal By-Products Regulations (EC 1774/2002) requires the diversion of catering waste from landfill, and under the EU Regulations waste foods containing animal by-products may also face a landfill ban from December 2005. Following the EU Regulations and the Foot-and-Mouth disease outbreak in 2001, the Animal By-Products Regulations (ABPR) 2003² introduced controls for the processing and end-use of composted material derived from catering (food) wastes. The ABPR mandate that biological treatment facilities processing catering (food) wastes be approved by the State Veterinary Service (SVS) before compost can be spread on land. During the first year of the regulations (from July 2003 to 2004), only 14 facilities were undergoing validation approvals by the SVS. Although additional facilities will have been approved during the second year of implementation, these are likely to be relatively few compared to the processing capacity required to meet the targets, which has been provisionally estimated at between three and six a month.

1.3.3 Planning guidance

A substantial number of biological treatment facilities need to be established in the UK to manage the biodegradable waste diverted from landfill to meet the Landfill Directive and LATS. It has been recognised that

²For further information on the Animal By-Products Regulations (2003), see DEFRA's webpage: <http://www.defra.gov.uk/animalh/by-prods/default.htm>, or for Composting Association members information is available from our website at www.compost.org.uk

planning processes are unacceptably long, and the Strategy Unit's Waste Not Want Not report (2002) strongly recommended revising guidance for planning and waste management. The planning process for waste management is under review, for example, in England the Office of the Deputy Prime Minister (ODPM) has issued a draft of the new Planning Policy Statement (PPS) 10 Planning for Sustainable Waste Management, which will replace PPG10.

PPS10 differs from PPG10 in that planning authorities will have a statutory duty to take the contents of the PPS into account. Key principals underpinning PPS10 include the waste hierarchy, the proximity principal, and facilities to meet the needs of communities whilst reflecting their concerns. Under PPS10 regional planning bodies (RPB) are required to take account of waste management requirements identified nationally and the Government's latest forecast of waste arisings and recycling potential.

In parallel with the PPS10 consultation, DEFRA proposes that the concept of best practicable environmental option (BPEO) be removed from the waste strategy as it has led to confusion and significant delays in the planning process for waste facilities. BPEO will be replaced by a Sustainability Appraisal set within an expectation of community and key stakeholder engagement, and an emphasis on the waste hierarchy.

1.4 Summary

Over the last few years there have been considerable developments in EU and national waste management policies, at the heart of some of these developments is a focus on managing biodegradable wastes more sustainably.

The introduction of the Landfill Allowance Trading Scheme (LATS) to meet the Landfill Directive targets for the diversion of biodegradable waste from landfill is a significant development in UK waste legislation. LATS combined with the 'composting' element of waste strategy targets will lead many local authorities to focus on biological treatment processes as an alternative to landfill.

Substantial composting capacity capable of treating both food and green wastes will be required for composting to make a significant contribution to alternatives to landfill.

The development of new facilities requires sequential approvals from the Local Planning Authority in granting planning permission, the Environment Agency in granting a waste management licence or exemption, and the State Veterinary Service in approving ABPR compliance (where catering waste and animal by-products are treated). Obtaining these approvals is often a lengthy process which can take a number of years, and sometimes the specific criteria required by the different regulatory bodies can conflict, complicating the various application processes. Such lengthy processes are likely to impede the ability of the composting industry to deliver sufficient and appropriate capacity to meet the challenging targets ahead.

The survey covered the financial year April 2003 to March 2004, and was conducted as both an e-mail and postal questionnaire. The survey design was similar to that used in the previous survey for 2001/02 to enable comparison of data.

An eight-page e-mail questionnaire was distributed to all commercial compost producers and a separate four-page questionnaire to all local authorities in May 2004. This was followed by a postal questionnaire distributed and sent to all those for whom there was no e-mail address or had not responded electronically. The survey covered the whole of the UK and questionnaires were sent to all local authorities in England, Northern Ireland, Scotland and Wales.

Respondents were given a month to complete the questionnaire, then further responses were sought by e-mail, a two page fax-back sheet, and by telephone.

The questionnaire for compost producers focused on site operations, source and type of organic material composted, site planning and licensing, compost products, end uses and markets. The questionnaire for local authorities focused on collection systems including household waste recycling centres (HWRC) and kerbside.

The questionnaires were largely quantitative, with most questions requiring either figures or responses to categorised answers (tick boxes). There were a few open-ended questions, where clarification or opinions were sought and respondents had the opportunity to add any general comments.

The survey was distributed to a total of 474 local authorities and 410 compost producers. It attained an overall response rate of 43 %. Local authorities achieved a slightly higher response rate at 49 %, compared to 36 % of composting operators. However, the percentage of the industry that was covered was greater than that indicated by the response rate, as many producers operated multiple sites and a large proportion of the raw material was composted by relatively few companies, which were all included in this survey.

For some questions respondents were given a choice of unit measurement to make the questionnaire easier to complete. To convert the compost product volumes to masses, screened composts were assumed to have a bulk density of 0.6 tonnes m⁻³ and mulch/timber based products a bulk density of 0.4 tonnes m⁻³.

Data were coded and analysed using SPSS (Statistical Package for the Social Sciences). Prior to analysis, the data were checked for inconsistencies and anomalies. Independent verification was carried out by the Open University, including:

- The sub-totals within sections and totals between different sections were compared and checked to balance e.g. products and markets;
- The data were checked against the 2001/02 survey returns and any significant changes were clarified;
- All categorised inputs were analysed to check that they were within an acceptable range specified in the questionnaire response options;
- Columns were checked against each other for any anomalies or inconsistencies;
- Any inconsistent, unclear or ambiguous returns were clarified by contacting the respondent by telephone;
- An audit of the data entry involving a 10 % check of responses.

For composting non-respondents known to be operating a site estimates were made using data held by The Composting Association, including previous survey responses and PAS 100 records.

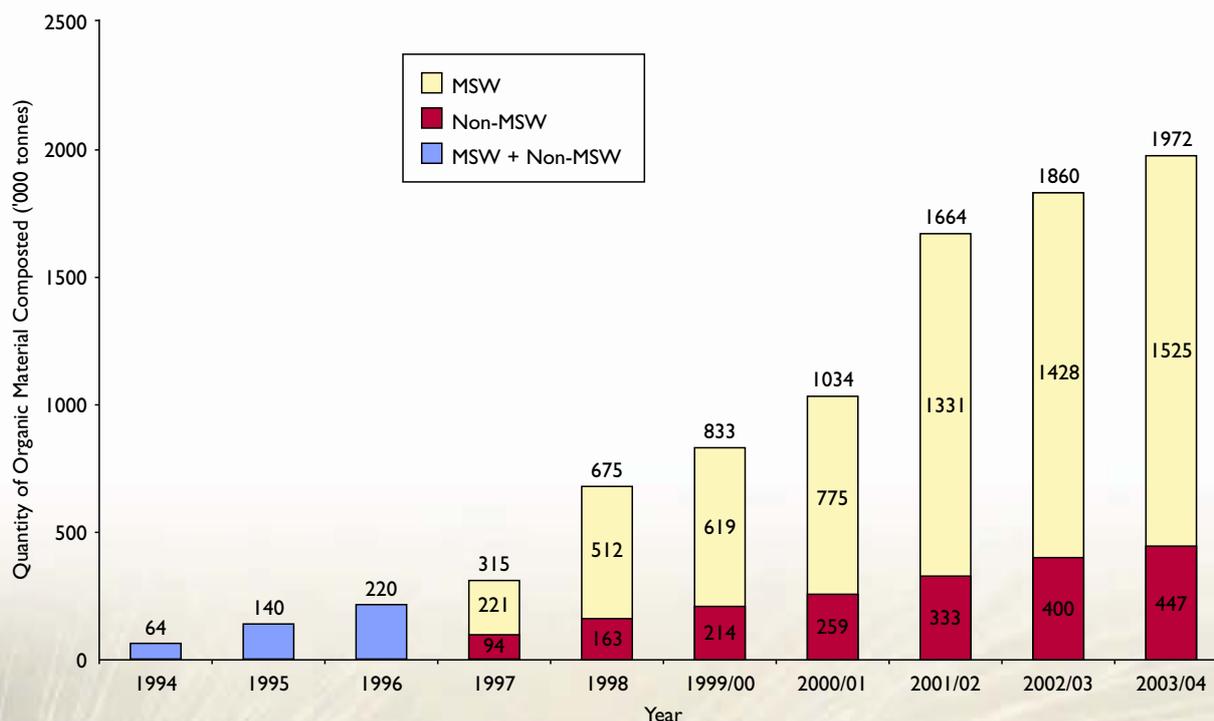
For local authority non-respondents estimates of organic material collected for composting were made using a number of sources. For Scotland and Wales data were taken from the municipal waste arising surveys (SEPA, 2004; WAG, 2004). In England³ and Northern Ireland non-respondents who operated organic collections were identified, an average quantity collected per household was derived from respondents and used to calculate estimates for non-respondents in proportion to their household population.

Some parts of the questionnaire were completed more readily than others. The market and product information section was more difficult for producers to calculate and was commercially sensitive, resulting in a reduced reporting rate of the product total. For this reason, where respondents did not provide information on quantities of composted product, they were estimated by multiplying the input waste at the site (in tonnes) by a factor of 0.6 (assumed to be the approximate resultant mass remaining after losses during composting). Estimates of composted products (e.g. mulches, soil conditioners etc.) were derived from those respondents who did provide data, multiplied up in accordance with the overall product total.

³In England, Aylesford Newsprint (2004) was used to identify local authorities who operated an organic collection. DEFRA's relevant municipal waste survey for England had not been published at the time of compiling these data.

Overall, the quantity of waste composted by the UK industry has continued to grow steadily over recent years (Figure 3.1). Since the last survey composted wastes have grown by just under 20 % over the two year period from 1.66 million tonnes (Mt) in 2001/02 to 1.97 million tonnes (Mt), an average growth rate of around 10 % per annum.

Figure 3.1 Growth in UK composting based on the total quantity of wastes processed per annum



MSW = Municipal Solid Waste
The years 2000/01 and 2002/03 were estimated

3.1 Wastes composted in England, Wales, Scotland and Northern Ireland

Table 3.1 shows the differences between organic wastes composted by site type for each nation in 2003/04. Of the total 1.97 Mt composted, England accounted for 1.67 Mt, Scotland 0.16 Mt, Northern Ireland 0.05 Mt and Wales 0.09 Mt.

England, Scotland and Wales all recorded increases in wastes composted since the previous survey, with Northern Ireland remaining relatively static. England recorded an 11 % increase, wastes composted in Wales more than doubled and in Scotland almost tripled. The majority of wastes in all nations were processed at centralised sites. However, the reliance on on-farm sites was greater in Scotland and Wales where on-farm composting accounted for around one-third of waste processed, compared to 10 % in England.

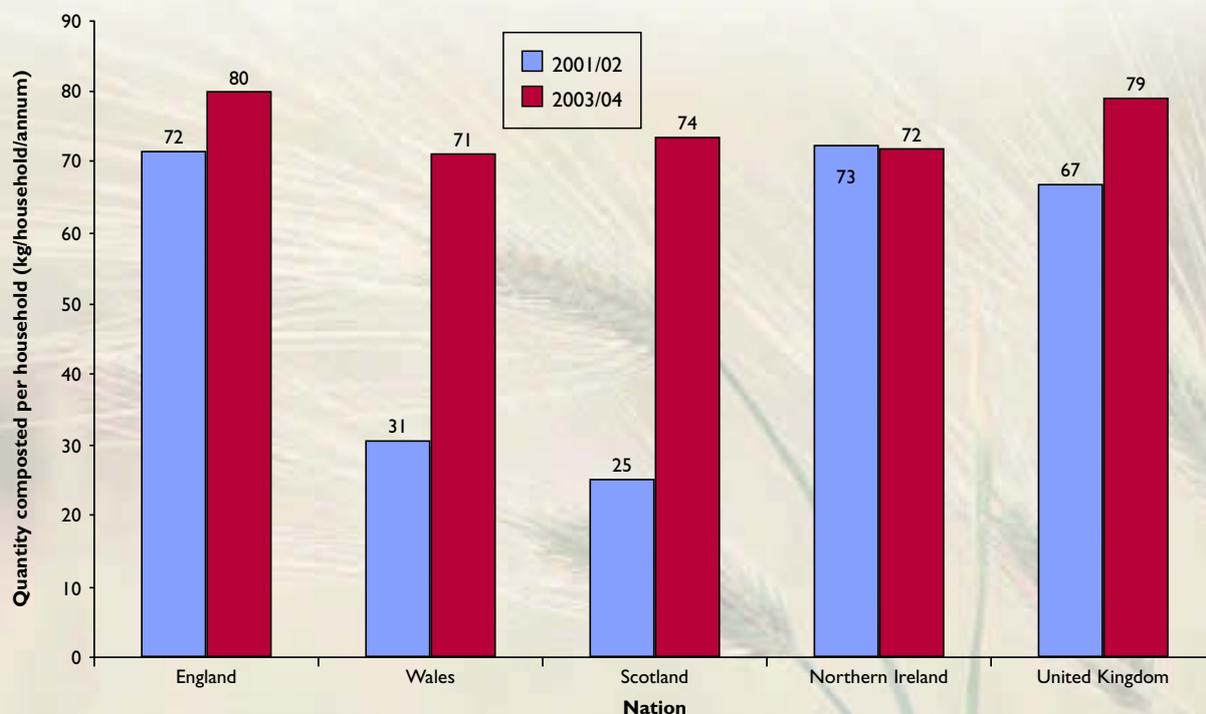
In Wales on-farm composting accounted for over half of the increase in wastes composted, and in England and Scotland they accounted for around one-third of the reported increases.

Table 3.1 Organic wastes composted in the UK in 2003/04 by nation and site type

Nation	Organic wastes throughput ('000 tonnes)							
	Centralised		On-farm		Other		Total	
	2001/02	2003/04	2001/02	2003/04	2001/02	2003/04	2001/02	2003/04
England	1,375	1,509	107	154	6	8	1,488	1,671
Wales	31	54	6	31	0	<1	37	85
Scotland	40	115	15	49	2	0	57	164
N. Ireland	47	40	3	12	2	0	52	52
Jersey	30	0	0	0	0	0	30	0
Total	1,523	1,718	131	246	10	8	1,664	1,972

The quantity composted was compared on a per household basis for each nation. Figure 3.2 shows that the rapid growth in composting recorded in Scotland and Wales since 2001/02 had resulted in relatively comparable quantities collected per household across each nation, with values ranging from 71-80 kg per household per annum⁴. Comparison with the 2001/02 data showed the overall quantity composted per household across the UK had increased from 67 kg per household per annum to 79 kg.

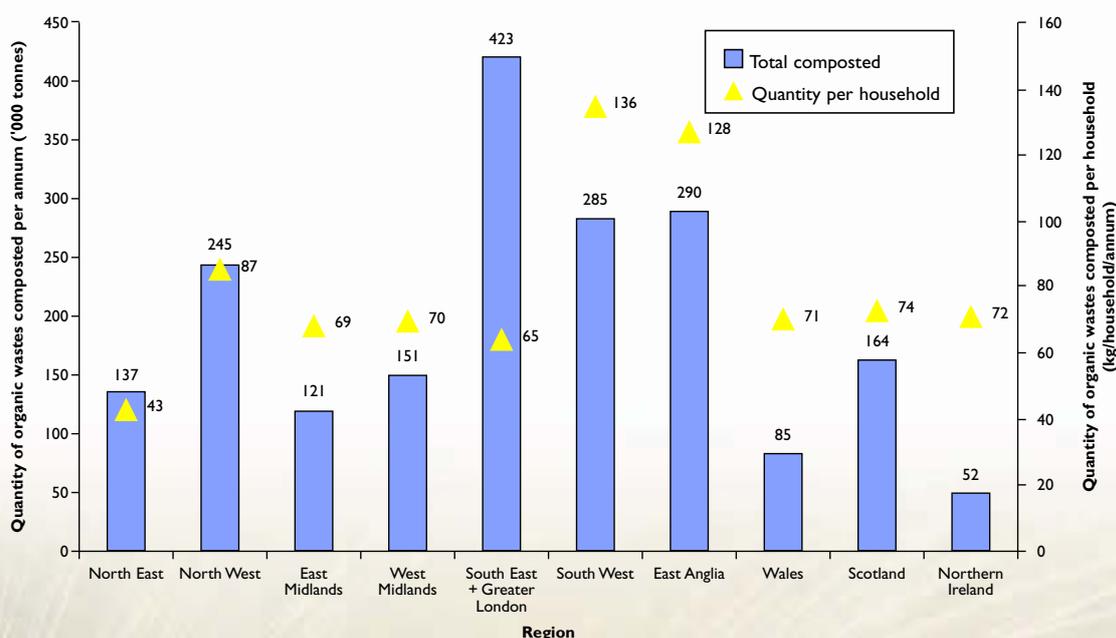
Figure 3.2 Total organic wastes composted on a per household basis across the UK in 2001/02 and 2003/04



⁴Note these figures do not refer to the amount of household waste collected/composted per household (this is covered in Section 4.3), but relates to total (municipal and non-municipal) wastes composted adjusted to reflect the different population sizes.

Figure 3.3 depicts the total quantity of waste composted and the quantity per household on a regional basis (split by nation and English government region). The data derived from the South East of England and Greater London were combined, as most wastes arising in London were composted outside of the region. The data showed that a performance gap still existed between the North including the Midlands (66 kg/household/ annum) and the South (92 kg/household/annum).

Figure 3.3 Quantities of all organic wastes composted regionally in England, and in Wales, Scotland and Northern Ireland (total and per household basis) in 2003/04



3.2 Household, municipal and commercial wastes composted

The questionnaire asked respondents to provide information on the types and quantities of wastes they composted. The responses were categorised into household, municipal (non-household) and commercial (non-municipal) as follows:

- Municipal wastes were all wastes that were collected by the local authorities or contractors acting on their behalf;
- Household included wastes collected both from household waste recycling centres (HWRC) and the kerbside;
- Non-household wastes referred to wastes collected from parks and gardens or other non-household wastes collected by local authorities;
- Commercial and industrial wastes included commercial landscaping and other wastes from private contractors;
- Other wastes e.g. sewage sludges were included in the commercial and industrial category.

As in previous surveys, the majority of wastes composted were municipal waste comprising 77 % (1.53 Mt) of the total recorded, and 23 % (0.45 Mt) were non-municipal (commercial/trade wastes). Composting of commercial and trade wastes had grown at a faster rate than the municipal fraction. Commercial / trade wastes composted had increased by 34 % compared to 15 % for the municipal fraction since the 2001/02 survey.

The majority of municipal wastes composted were sourced from households, representing 1.44 Mt of the total 1.97 Mt (Table 3.2). Green waste collected from household waste recycling centres (HWRC) saw a small increase since the previous survey (from 1.04 Mt in 2001/02 to 1.07 Mt in 2003/04) and continued to be a main source of wastes, accounting for three-quarters of municipal wastes composted and over half of the total composted in the UK. The remaining household waste was predominately collected from the kerbside.

A distinction was made between 'garden wastes only' and 'mixed kitchen and garden wastes'. 'Garden wastes only' collected from the kerbside more than doubled since the previous survey, increasing from 0.11 Mt in 2001/02 to 0.31 Mt in 2003/04, 'mixed kitchen and garden wastes' remained relatively static at 0.05 Mt, giving a total of 0.36 Mt of household wastes collected from the kerbside in 2003/04. The non-household municipal fraction accounted for 0.08 Mt and, consisted of two main components: commercial landscaping (approximately 30 %) and food wastes (54 %).

The composting operators surveyed were responsible for processing 0.45 Mt tonnes of commercial (non municipal) wastes in the UK. The two largest categories were forestry and landscaping accounting for 32 % and 19 % of non-municipal wastes respectively.

Overall, the waste type data illustrated in Table 3.2 is similar to that reported in 2001/02 (not shown), with the exception of the large increase reported in garden wastes collected from the kerbside.

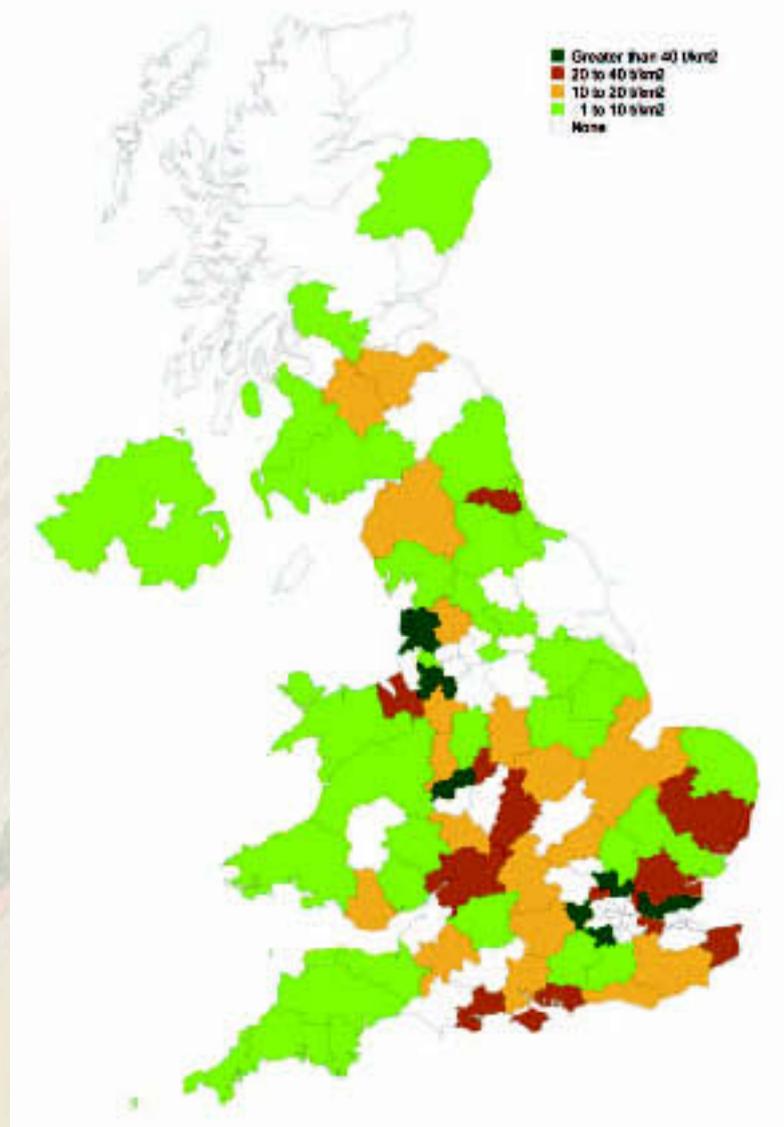
Table 3.2 Quantities and types of feedstock processed in the UK in 2003/04

Waste type	Input quantity ('000 tonnes)	Category percentage (%)	Total percentage (%)
MUNICIPAL HOUSEHOLD			
Garden from HWRC / bring sites	1,070	74.1	54.2
Garden only from kerbside collections	309	21.4	15.7
Garden & kitchen from kerbside collection	49	3.4	2.5
Kitchen waste only	2	0.2	0.1
Other	13	0.9	0.7
Total household	1,443	100.0	73.1
MUNICIPAL NON-HOUSEHOLD			
LA parks and garden	44	53.7	2.2
Food from processors (municipal)	24	29.3	1.2
Food from retailers (municipal)	3	3.6	0.1
Other municipal	11	13.4	0.5
Total municipal non-household	82	100.0	4.2
COMMERCIAL (NON MUNICIPAL)			
Commercial landscape	86	19.2	4.3
Forestry	145	32.5	7.4
Food processing	41	9.2	2.1
Food retailers	5	1.1	0.3
Paper & card	2	0.4	0.1
Other organic by-products	168	37.6	8.5
Total non municipal	447	100.0	22.7
TOTAL COMPOSTED	1,972		100.0

The vast majority of biodegradable wastes composted originated from garden wastes (78 % of all wastes composted, 95 % of municipal wastes). 'Food wastes' and 'garden wastes collected with kitchen wastes' accounted for only 6 %. It is estimated that kitchen wastes accounts for 17 % of the household bin (Parfitt, 2002), so there is significant potential for future growth in food wastes composting, when compared to what has already been achieved for green wastes.

Figure 3.4 shows the postcode areas across the UK, and the composting 'density' per square kilometre in each area. The quantity of organic waste composted within a postcode area was divided by the area of land (in kilometres) covered by the postcode. This map is useful in highlighting areas with relatively low or no composting throughput. It is important to note that the data relate solely to where the wastes were composted and do not relate to local authorities' boundaries or their performance targets.

Figure 3.4 Tonnes composted per square kilometre by postcode area in the UK in 2003/04



The data presented in this section relate to municipal organic wastes collected by local authorities. There are three types of local authorities in the UK with regard to waste management:

- Waste Collection Authorities (WCAs) are responsible for the collection of wastes directly from households (and will also collect, if requested, commercial and industrial wastes). In this survey they were therefore responsible for operating kerbside collection schemes;
- Waste Disposal Authorities (WDAs) are responsible for providing disposal sites to which they direct the Waste Collection Authorities for the disposal of their controlled wastes, and with providing household waste recycling centres;
- Unitary Authorities (UAs) have responsibilities for both waste collection and disposal.

All three types exist in England, where some authorities (Waste Disposal Authorities and Waste Collection Authorities) operate a two tier system between waste collection and disposal functions, and Unitary Authorities perform both functions. In Northern Ireland, Scotland and Wales all authorities are Unitary.

Questionnaires were distributed to the 474 local authorities in the UK, and 230 responses were received (132 WCAs, 26 WDAs, 72 UAs). For non-respondents estimates of organic wastes collected for composting were made using municipal waste arising surveys (see Section 2).

Local authorities were categorised according to the two main collection systems employed in the UK, namely: bring schemes (for organic wastes these are principally household waste recycling centres) and kerbside collections. A bring scheme is a collection method that requires householders to take their green waste (or other recyclables) to a central point. These are referred to in this report as household waste recycling centres (HWRC), although they are also sometimes called civic amenity sites by some local authorities. A kerbside scheme is a collection method where organic wastes (or other recyclables) are regularly collected from households normally at the curtilage of the property.

The survey estimated a total of 1.36 Mt of organic wastes collected by local authorities for composting in the UK during 2003/04 (Figure 4.1). Of this total, 0.93 Mt were collected from HWRC and 0.39 Mt from kerbside schemes. A further 0.04 Mt were collected by other means, for example, a separate local authority park and garden collection. These figures tally reasonably well with municipal wastes composted as reported by producers (1.07 Mt composted from HWRC, 0.36 Mt composted from kerbside) in Section 3.

Figure 4.1 Estimate (million tonnes) of the organic material collected by local authorities for composting in the UK in 2003/04

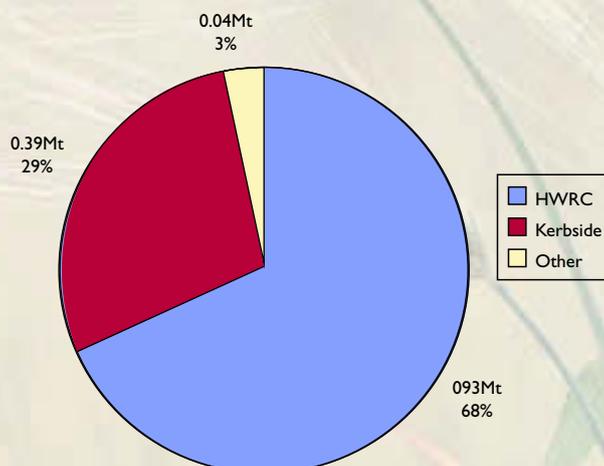


Table 4.1 illustrates the estimated number of local authorities operating a separate collection system for organic wastes. Just over two-thirds of authorities had either HWRC or kerbside systems in place, whilst just under one-third had no separate collection provision.

Table 4.1 The number of local authorities operating separate organic collection schemes in 2003/04

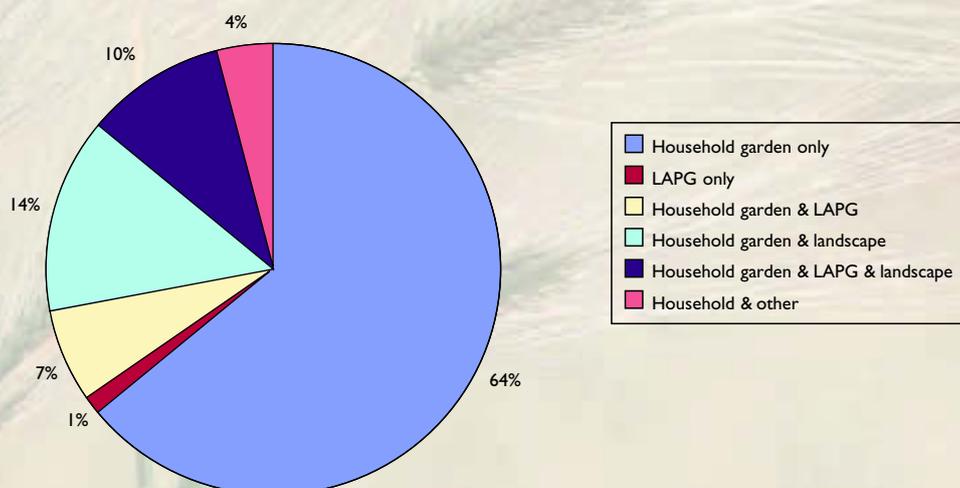
Collection scheme	Number of local authorities
HWRC only	108
Kerbside only	165
HWRC and kerbside	60
Not operating a separate collection	141
Total	474

4.1 Bring schemes

The use of household waste recycling centres (HWRC) was the main organic wastes collection method used by local authorities, continuing the trend established in previous surveys. An estimated 0.93 Mt of predominantly green wastes were collected by authorities for composting via HWRC in 2003/04, which tallies reasonably well with the responses from producers, who reported 1.07 Mt of HWRC derived material composted. A difference of this magnitude may be expected considering the two different sources of data.

The percentage of respondents that accepted different types of organic wastes at HWRC is shown in Figure 4.2. The main types of wastes collected were 'garden wastes' i.e. household garden wastes, local authority park and garden wastes (LAPG) and 'landscape'. The latter refers to commercial green wastes accepted by local authorities.

Figure 4.2 Percentage of local authorities accepting different types of organic wastes at HWRC across the UK in 2003/04



Note: LAPG = local authorities park and garden waste

Although all the HWRC reported in the survey collected garden wastes, they had different acceptance criteria depending upon the source of the material. All centres accepted wastes from households, and sixty-four percent of local authorities (77 % of the total quantity of waste collected) would only accept this source. Some local authorities accepted other wastes in addition to household wastes including commercial (14 %) and local authority park and garden wastes (7 %).

The size and number of HWRC varied across the UK, ranging from local authorities that had just one site to those that operated 26 sites. Forty-six percent of local authorities surveyed had two or less HWRC. The densities also varied widely from 0.01 sites per thousand households to 0.53, with an average (median) of 0.03. Seventy-five percent of local authorities had less than 0.06 centres per 1,000 households. There was a clear relationship between the densities of bring sites, and the quantity of material collected per household. HWRC were split into the following categories:

- $0 \leq 0.2$ sites per 1,000 households;
- $>0.2 \leq 0.4$ sites per 1,000 households;
- >0.4 sites per 1,000 households.

Local authorities with HWRC densities between 0 and 0.2 per 1,000 households collected an average of 26 kg per household per annum, this increased to 49 kg for those greater than 0.2 and less than 0.4, and 67 kg per annum for above 0.4 sites per 1000 households.

The vast majority of local authorities (90 %) indicated that they had not increased the number of HWRC operated during the survey period; only 8 % had increased the number of sites in their area. This trend has continued since the 2001/02 survey, which reported that sites run by 81 % of local authorities had remained unchanged compared with the previous year. Few local authorities (4 %) have reported any plans to introduce new sites, which suggests that if local authorities wish to increase quantities collected it is likely to be through improved use of existing sites rather than the introduction of new ones. The 0.93 Mt of green wastes collected via HWRC by local authorities in 2003/04 was similar to that reported in 2001/02.

4.2 Kerbside schemes

The number and type of kerbside collections for recyclables has increased in recent years. A recent report (Aylesford Newsprint, 2004) demonstrated that 31 % of local authorities have already met the requirement laid down in the Household Waste Recycling Act (2003) to provide two or more separate recyclables collections across 95 % of households by 2010. Local authorities' targets for recycling and composting and the diversion of biodegradable waste from landfill (see Section 1) has encouraged the introduction of separate collection schemes for organic wastes. This legal obligation combined with more emphasis on tackling food wastes seems likely to further increase separate kerbside collections.

It was estimated that 225 local authorities (47 %) across the UK operated a separate kerbside collection for organics in 2003/04, collecting approximately 0.39 Mt of organic wastes (which is comparable to the 0.36 Mt reported by compost producers, see Section 3). This was derived from respondents and estimates for non-respondents (see Section 2).

Comparison with previous surveys (Figure 4.3) shows the total quantity of organic wastes collected by authorities has increased substantially over the last few years. Although HWRC continued to be the most dominant collection route in 2003/04, quantities collected via HWRC remained similar to 2001/02 whereas quantities

collected from the kerbside more than doubled. In 1999/00 the proportion of organic wastes collected from the kerbside accounted for around 10 % of the total, this increased to 14 % in 2001/02, and rose to 29 % in 2003/04.

Around 50 % of kerbside schemes reported in the survey had been in operation for less than 12 months, and hence recorded quantities of organic wastes collected for only part of the survey year 2003/04. It follows that next year should witness a further increase as these collections mature.

Figure 4.3 Growth in organic wastes collected each year from HWRC and the kerbside across the UK from 1999/00 to 2003/04

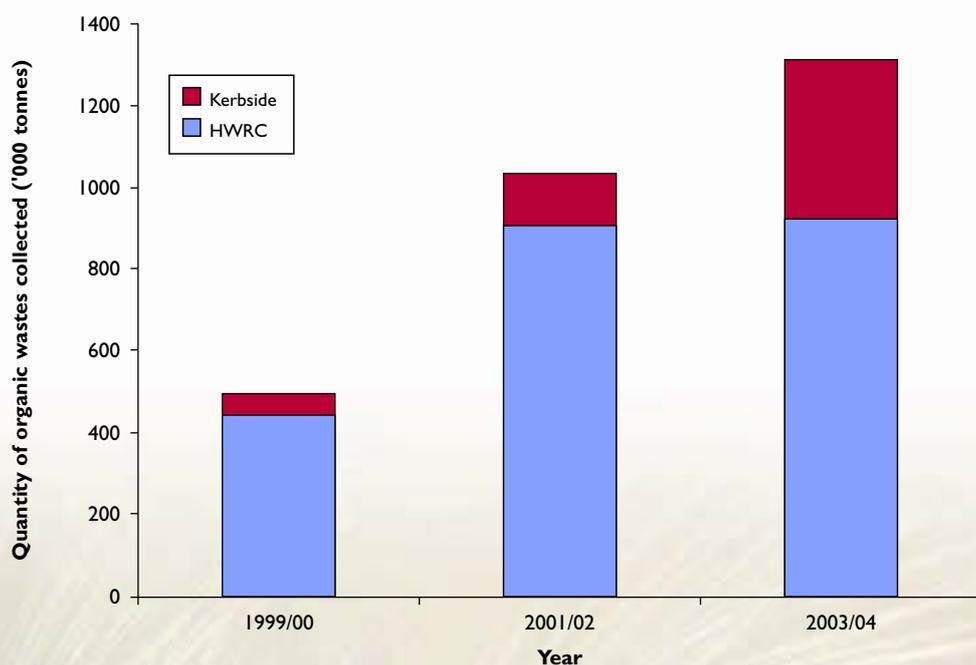


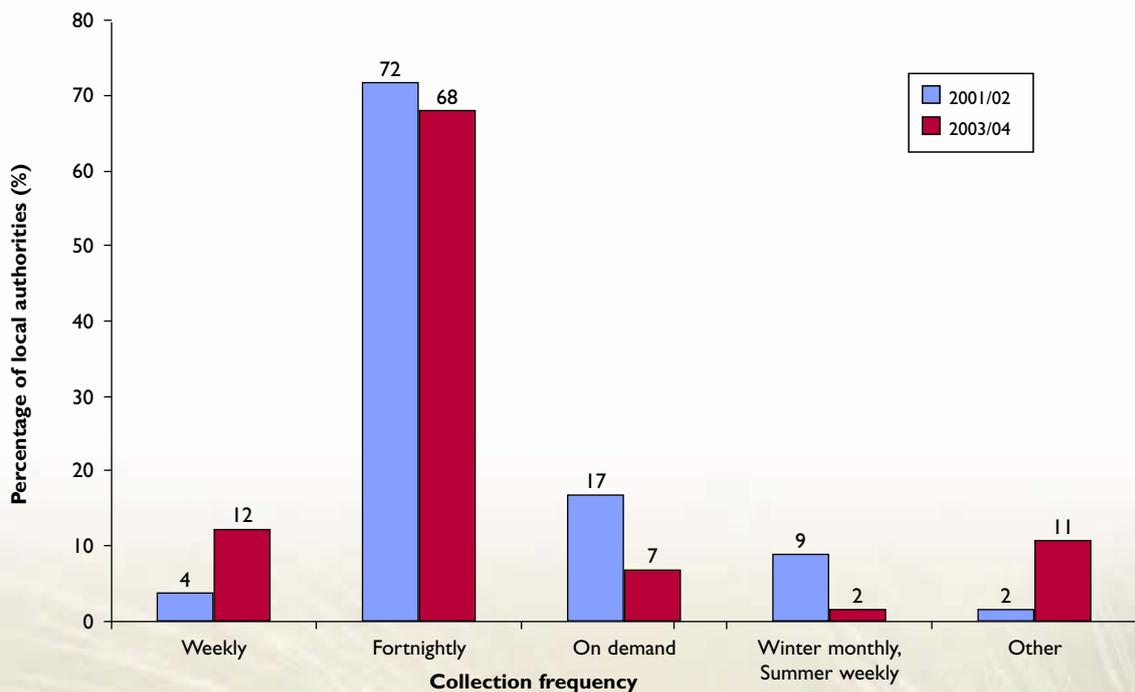
Table 4.2 depicts the different types of wastes accepted by local authorities in kerbside collections. Nearly all local authorities accepted green waste either on its own (74 %), or in combination with kitchen or cardboard waste (25 %). Eighteen percent accepted cardboard with either kitchen or green waste. Thirteen percent accepted kitchen waste, which equated to 62 local authorities, of which, only two accepted meat.

Table 4.2 Percentage of local authorities accepting different types of organic wastes in their collections in 2003/04

Waste type	Percentage of local authorities
Garden only	74
Garden and kitchen only	7
Garden and cardboard only	11
Garden kitchen and cardboard only	6
Other	2
Total	100

The local authorities were asked how frequently they provided kerbside collections (Figure 4.4) and were given the option: fortnightly, weekly, monthly, on-demand or 'other.' The 'other' category included 'monthly' and 'summer fortnightly, winter monthly' collections. The data showed that fortnightly collections had a very similar frequency (68 %) compared to 2001/02 (72 %), but other frequencies had changed – on demand collections had been reduced and weekly collections had risen.

Figure 4.4 Frequency of kerbside collections in 2001/02 and 2003/04



During 2003/04 many local authorities employed a mixture of collection containers. The percentage of local authorities that used bins or bags was similar to previous years, but local authorities that used only bags rose from 23 % (2001/02 data not shown) to 29 %, and a corresponding reduction in the number using only bins from 59 % (2001/02 data not shown) to 53 %.

The 18 % of local authorities that provided more than one collection container were asked to qualify their reasoning. The responses were split three ways between:

- Residents in different collection areas who were given different containers
- Residents who were given a choice of containers
- Other reasons

The main reason in the 'other' category was that residents were provided with bags if bins were not suitable e.g. storage space. Other reasons included bags were accepted if the bin was not used, and that schemes were extended with different containers.

The data (Table 4.3) shows the different types of bin and bags used by local authorities. The main types of containers used by local authorities were wheeled bins (71 %). The prominence of wheeled bins has been reflected in previous surveys. There was more variability regarding the bag type used. Non-biodegradable bags were used by 18 % of local authorities, biodegradable (compostable) plastic bags (10 %), biodegradable paper bags (8 %) and reusable bags (8 %).

Table 4.3 Percentage of local authorities using different collection containers in 2003/04

Container type	Percentage of local authorities (%)
BAG ONLY	
Wheeled bin	51
Other bin	1
Mixture of two (not stated)	1
Total	53
MIXTURE OF BIN AND BAG	
Wheeled bin and non-biodegradable plastic bag	3
Wheeled bin and biodegradable plastic bag	6
Wheeled bin and biodegradable paper bag	4
Wheeled bin and re-useable bag	4
Wheeled bin and 'other bag'	1
Total	18
BAG ONLY	
Non-biodegradable plastic bag	15
Biodegradable / compostable plastic bag	4
Biodegradable / compostable paper bag	4
Re-useable bag	4
Other bag	1
Mixture of two (not stated)	1
Total	29
GRAND TOTAL	100

4.3 Typical quantities collected per household

The Composting Association is frequently asked to supply information on typical quantities of organic wastes collected from the kerbside. Data can be calculated and presented in different ways (such as quantities per household in the catchment area, or quantities per participating household). Interpreting and applying 'typical' quantities is difficult as different methods are underpinned by different assumptions and will be influenced by an array of factors at the local level (e.g. geographical location, scheme design, communication, HWRC density). In calculating the following quantities collected per household the data have been adjusted to account for the bias from new schemes that came into operation during the survey year (i.e. their data related to part rather than a complete year).

One estimate for quantity collected per household may be calculated by dividing the total waste collected in a local authorities' area by the number of households in that catchment. This method has been used in previous Composting Association surveys, and also by DEFRA in their Municipal Waste Management surveys. Taking an average of responding local authorities, the data showed that approximately 60 kg/household/annum was collected in the local authority catchment area, an increase from the 50 kg/household/annum recorded in the previous survey (Table 4.4). This compares to approximately 42 kg/household/annum recorded for HWRC, which fell from 49 kg/household/annum in the previous survey. Some of the reduction in quantity collected per household at HWRC may be accounted for by it being diverted through kerbside collection schemes. These figures are similar to those recorded by DEFRA (2004). The main caveat with this calculation is that it does not account for participation levels and the fact that kerbside collection may not take place across an entire area, i.e. households are included in the calculation that may not have had access to the scheme.

Another method is to calculate the quantity of waste collected per participating household. Collecting accurate participation data is both time consuming and costly and a number of local authorities did not provide this information in the survey. In some mandatory schemes local authorities indicated that all households covered by the scheme actually participated, which is likely to be an overestimation of participation levels leading to an underestimation of the quantity collected per participating household. Bearing in mind these caveats, calculating the quantity per participating household from the data provided is useful to give a general approximation. A total of 45 local authorities whose schemes had been in operation for a full year or more provided participation data, and on average these schemes collected around 195 kg/household/annum per participating household (Table 4.4).

Comparisons were made between the amounts collected per participating household using different container type, and as with previous surveys a greater quantity of organic waste were reported for wheeled bins compared to other containment methods. Wheeled bins collected an average of 213 kg/household/annum, whereas schemes using bags collected 138 kg/household/annum and schemes using a mixture of wheeled bins and bags collected 187 kg/household/annum (Table 4.4).

Table 4.4 Quantity collected per household for different calculation methods in 2001/02 and 2003/04

Calculation Method	Average quantity reported in 2001/02 (kg/household/annum)	Average quantity reported in 2003/04 (kg/household/annum)
Per household in catchment area	50	60
Per participating household - (all container types)	212	195
Per participating household - wheeled bins	232	213
Per participating household - bags	136	138
Per participating household - mixture of bins and bags	178	187

Local authorities have the option to charge households for green waste collections under the Environmental Protection Act 1990. There may be different reasons why local authorities opt for a charged system, such as raising funds to support the scheme or limiting the quantities diverted from HWRC and home composting. Forty-four local authorities recorded in the survey made a charge for collections and these collected an average of 41 kg/household/annum in their catchment area compared with 67 kg/household/annum for non-charged schemes. Schemes that levy a charge were therefore likely to attract fewer participants compared with non-charged schemes.

5

Composting facilities

This section reports on data collated from individual composting sites. Where compost producers operated multiple sites, questionnaires were completed for each individual site.

5.1 Classification of composting facilities

Composting facilities in the UK operated on a number of different levels, from very small-scale sites, which processed less than 100 tonnes of waste per annum to those that processed over 50,000 tonnes per annum (tpa). Following the classification used in previous surveys and to enable comparison of data, sites have been classified into centralised and on-farm⁵.

For the purposes of this survey the following definitions were used:

- Centralised - sites that tended to process in excess of 5,000 tonnes of waste per annum. These sites normally operated under a waste management licence, received waste from external sources and either used the compost on site or distributed it externally.
- On-Farm - sites that were situated on farms, tending to process less than 5,000 tonnes per year. These normally operated under a waste management licence exemption, received waste from an external source and used the compost on the farm on which it was produced.
- Other - miscellaneous sites that did not fit into any of the above categories e.g. mobile contractor.

As with previous surveys, the division between on-farm and centralised sites was not always clear cut. This survey adopted the criterion used previously where sites situated on farms that met at least two out of the following three conditions were categorised as on-farm:

- Processed 5,000 tonnes per annum (tpa) or less
- Waste management licence exempt
- Used the compost on site

5.2 Number of facilities

The survey recorded a total of 325 composting facilities in operation across the UK in 2003/04. The responses made by different types of organisation are shown in Table 5.1. Following the trend observed in previous years, dedicated compost producers (organisations whose primary activity is compost production) and waste management companies dominated the centralised composting sector (see Section 5.4). As would be expected, on-farm sites were mainly operated by agricultural organisations, including individual farmers. Collectively, waste companies and dedicated compost producers processed 95 % of wastes composted at centralised sites, and agricultural companies accounted of 85 % of wastes composted on-farms.

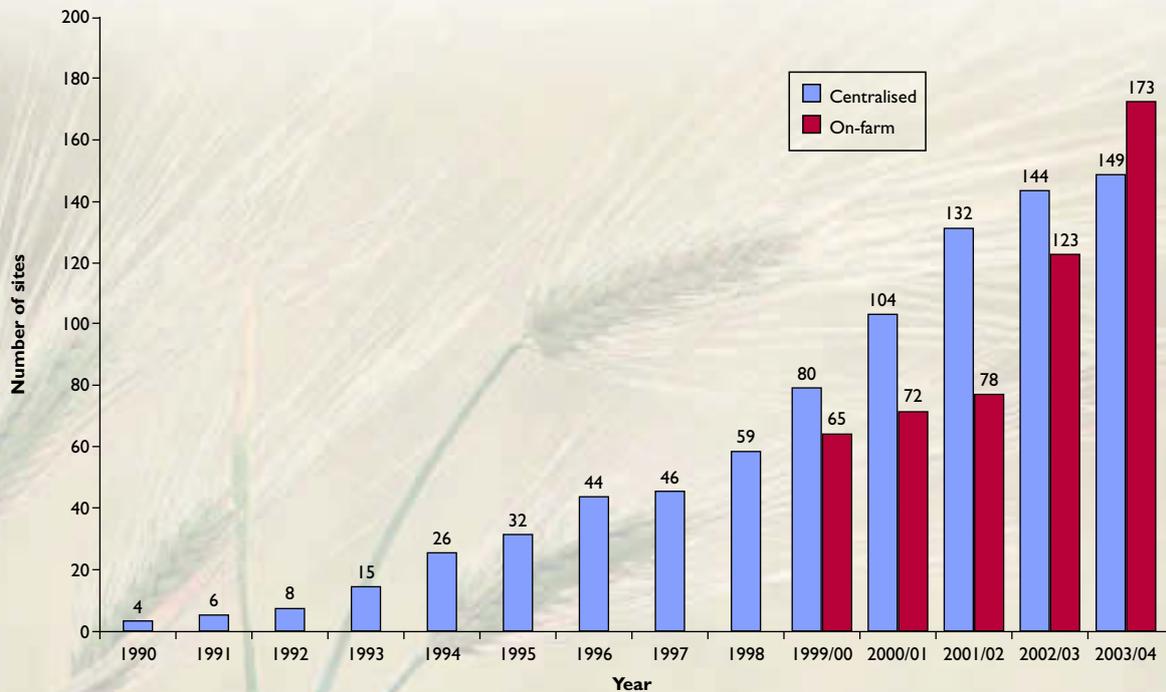
⁵Community composting sites were not included in this survey.

Table 5.1 Different types of organisations operating centralised and on-farm sites in 2003/04

Organisation type	Number of on-farm sites	Number of centralised sites	Number of 'other' sites	Total number of sites
Unitary authority	1	4	-	5
Dedicated compost producer	-	57	1	58
Waste company	12	73	-	85
Agriculture	159	6	-	165
Not-for-profit	-	1	1	2
Water company	-	2	0	2
Horticultural	1	1	1	3
Other company	-	5	-	5
Total	173	149	3	325

Table 5.1 shows that a total of 325 facilities were recorded in 2003/04, comprising 149 centralised, 173 on-farm and 3 'other' sites. Results from this survey together with previous Composting Association surveys show there has been a steady growth in the number of both centralised and on-farm facilities over the past decade (Figure 5.1). Since the previous survey the number of on-farm sites had increased significantly from 78 (in 2001/02) to 173 (in 2003/04); furthermore the data indicated that there were more on-farm sites operating in 2003/04 than centralised sites.

Figure 5.1 The number of centralised and on-farms composting sites in the UK



The years 2000/01 and 2002/03 were estimated

Table 5.2 shows the number and type of site for each nation in 2001/02 and 2003/04. The number of on-farm sites increased in all countries, although the greatest rate of growth was observed in Scotland and Wales. Although all countries also saw an increase in the number of centralised sites, the rate of growth in new centralised sites in England had slowed compared to the previous survey.

Table 5.2 Number and type of sites in each nation in 2001/02 and 2003/04

Nation	Number of sites in 2001/02			Number of sites in 2003/04		
	On-farm	Centralised	Other	On-farm	Centralised	Other
England	66	111	4	97	113	2
Wales	4	8	1	30	13	1
Scotland	6	9	2	41	19	0
N Ireland	2	3	1	5	4	0
Total	78	131	8	173	149	3

5.3 Facility size and type

Following the trend of previous surveys, the majority of wastes composted were processed at centralised sites, accounting for 1.71 Mt (up from 1.52 Mt in 2001/02). However as a proportion of the total, wastes composted at centralised sites fell from 92 % in 2001/02 to 87 % in 2003/04, the result of a greater rate of growth in on-farm sites. Wastes composted at on-farm sites doubled from 0.13 Mt in 2001/02 to 0.25 Mt in 2003/04, accounting for an increase in the proportion of the total from 8 % to 13 %.

The median annual throughput at centralised sites increased from 8,000 tonnes per annum (tpa) to 10,000 tpa between 2001/02 and 2003/04, and from 811 tpa to 1,000 tpa at on-farm sites. The change in average (median) annual throughput for centralised and on-farm sites for each nation is illustrated in Figure 5.2.

Centralised sites ranged from trials of a few hundred tonnes to sites processing in excess of 50,000 tpa. Although an increase was observed in the average annual throughput, the centralised composting sector continued to be characterised by a large number of relatively small scale sites. The proportion of small scale sites was virtually identical to that observed in the previous survey, with around half of all centralised sites processing $\leq 10,000$ tpa, and three-quarters processing $\leq 15,000$ tpa.

On-farm sites ranged from those processing 100 tpa to sites processing in excess of 5,000 tpa, half of all on-farm sites processed $\leq 1,000$ tpa and over three-quarters processed $\leq 2,000$ tpa.

Figure 5.2 Average annual throughput at composting facilities in the UK in 2001/02 and 2003/04

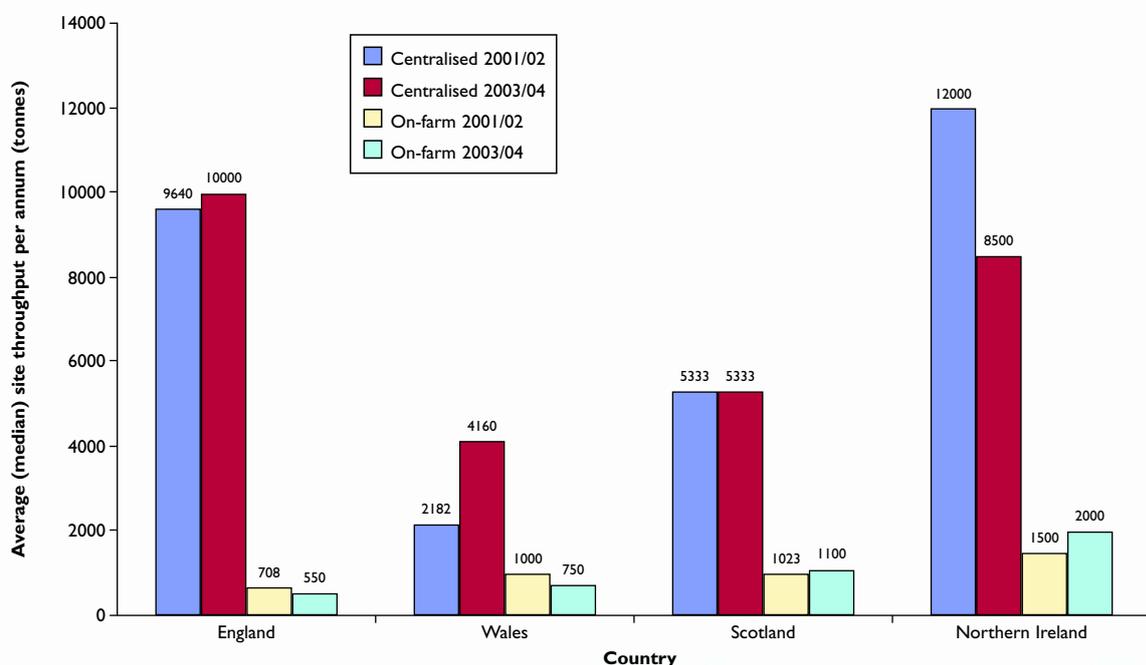


Figure 5.2 shows that the average (median) annual throughput at centralised sites remained relatively static between 2001/02 and 2003/04 in England and Scotland (10,000 tpa and 5,333 tpa tonnes, respectively), in Wales it has almost doubled from 2,182 tpa to 4,160 tpa, whereas in Northern Ireland it reduced from 12,000 tpa to 8,500 tpa.

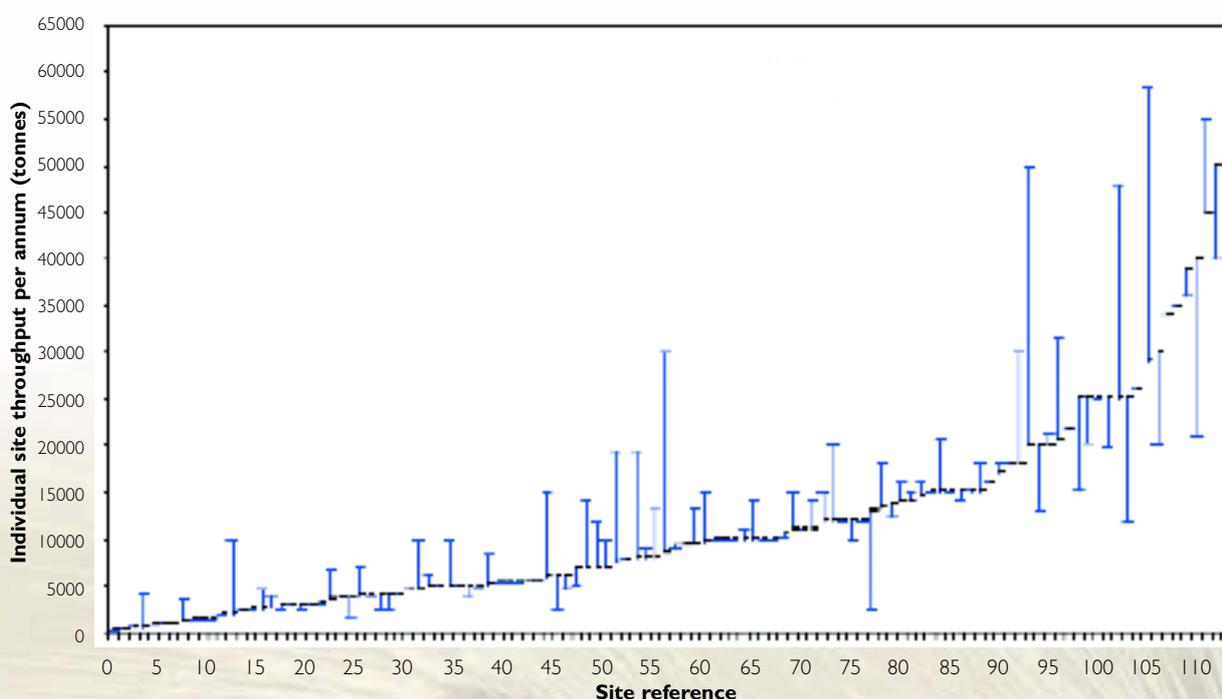
The fall in the average annual throughput at on-farm sites in England and Wales can be explained by the increase in the number of on-farm sites (see Table 5.2) operating at a very small scale. The industry in Northern Ireland, Scotland and Wales, processed a greater proportion at on-farm sites compared to England. Table 5.3 shows that this proportion has increased significantly in Northern Ireland and Wales since the previous survey, whilst remaining relatively constant in England and Scotland.

Table 5.3 Wastes processed at on-farm and centralised sites for each nations in 2001/02 and 2003/04

Nation	2001/02			2003/04		
	Proportion composted (%)		Annual throughput ('000 tonnes)	Proportion composted (%)		Annual throughput ('000 tonnes)
	On-farm	Centralised	Total	On-farm	Centralised	Total
England	8 %	92 %	1,489	10 %	90 %	1,672
Wales	15 %	84 %	37	36 %	64 %	85
Scotland	27 %	70 %	56	30 %	70 %	164
N Ireland	10 %	90 %	52	23 %	77 %	51

By comparing responses for individual sites with the previous survey it was possible to 'match' 114 centralised sites that responded to both the 2001/02 and 2003/04 surveys, which enabled the change in throughput per annum to be compared for these individual sites. Figure 5.3 shows this change in individual throughput per annum, the horizontal black line represents throughput reported in 2001/02 and the blue T-bar shows where annual throughput had increased or decreased to, as recorded in 2003/04. Overall, annual throughput for around 2 in every 5 centralised sites remained constant between the surveys, 2 in every 5 sites increased annual throughput, and 1 in 5 sites reduced annual throughput. Overall the total wastes composted by these sites increased from 1.32 Mt per year to 1.48 Mt per year, and on average individual sites have increased their throughput by 13 %.

Figure 5.3 Change in individual centralised site throughput from 2001/02 to 2003/04



(The horizontal black bar represents throughput in 2001/02, the blue t-bar shows the amount of increase or decrease in throughput from 2001/02 to 2003/04)

This survey also enabled responses from individual on-farm sites to be compared with previous data. Virtually all the on-farm sites recorded in the 2001/02 survey (78 sites) were also recorded in 2003/04, and the data shows that for two-thirds of these sites annual throughput remained relatively constant, one-third increased annual quantities processed, whilst a very small number (3 sites) reduced their annual throughput. Overall, the total wastes composted by these sites increased by just one thousand tonnes, from 124 to 125 thousand tonnes.

The data also showed that on average established centralised sites operated on a larger scale than newly established⁶ centralised sites (median of 10,000 tpa compared to 6,000 tpa), whereas the average annual throughput was similar for both established and new on-farm sites at around 1,000 tpa.

⁶Newly established sites refer to sites recorded in this survey (2003/04), but not recorded in previous surveys.

Of the total 1.97 Mt wastes composted, established centralised sites accounted for 74 %, new centralised sites 13 %, established on-farm sites 7 % and new on-farm sites 6 %. This shows that centralised sites continued to dominate the industry in terms of material processed, although analysis of the increase in throughput recorded since the previous survey reveals the growing role of the on-farm sector. Of the 0.31 Mt increase, expansion of established centralised sites accounted for around 50 %, new on-farm sites accounted for around 35 % with new centralised sites contributing the remainder:

Figure 5.4 Individual site throughput (tpa) by site type across the UK in 2003/04

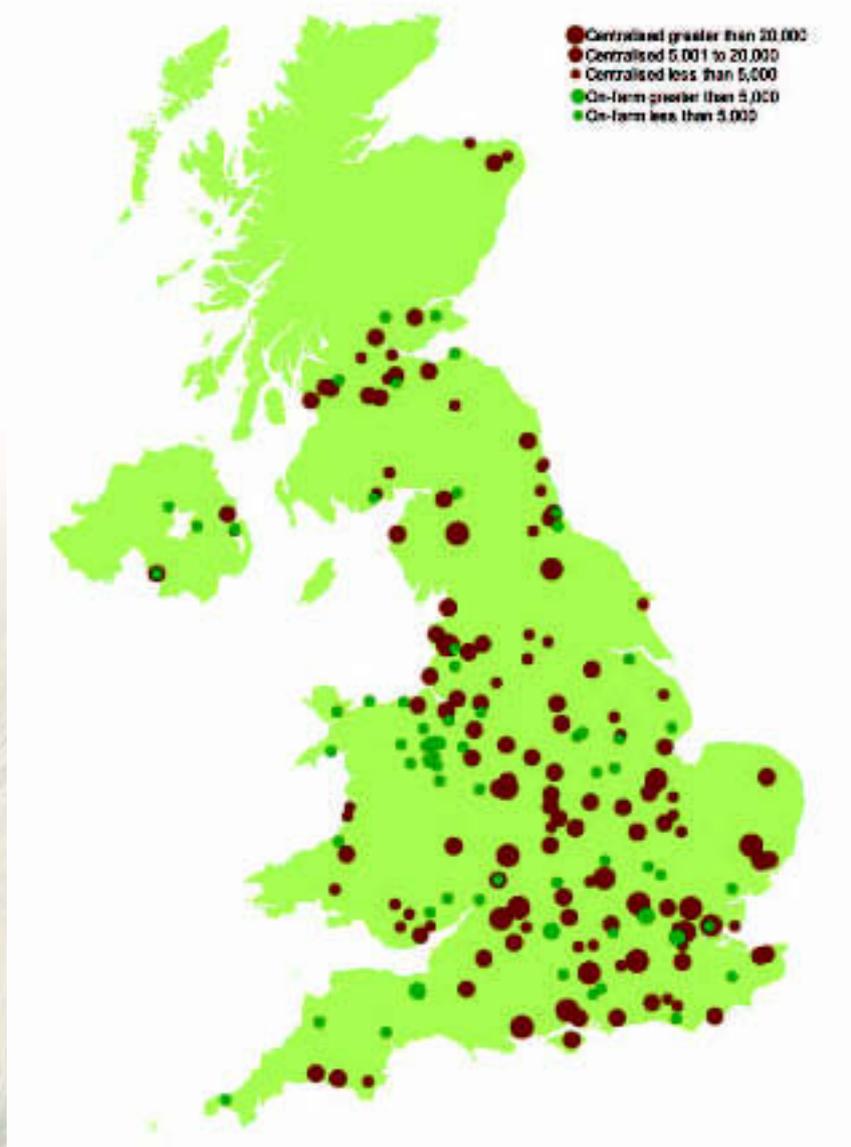


Figure 5.4 shows approximate locations of individual centralised and on-farm sites by different throughput ranges (where information was available). It is useful in giving a general indication of site location and throughput activity across the UK.

5.4 Operator type

The UK composting industry was dominated by 3 main types of operator:

- Dedicated compost producers – organisations whose primary activity is compost production;
- Waste management company – organisations involved in a range of waste management activities that also operate composting sites;
- Agricultural company – individuals or organisations involved in agricultural activity, or linked to such activity, that operate on-farm composting sites.

Table 5.4 shows the different types of operators running composting sites in 2001/02 and 2003/04. Most dedicated compost producers operated a single, larger-scale site, and waste management companies tended to operate multiple sites with a smaller annual throughput per site, and this follows the trend observed in previous years. The largest area of growth in the number of sites per operator was in the agricultural classification, and most of this growth was characterised by individual operators co-ordinating composting activity at multiple on-farm, small-scale sites. The trend reported in 2001/02, which showed a shift away from ownership of sites by local authorities, has also continued in 2003/04.

Table 5.4 Number of operators and number of sites in 2001/02 and 2003/04

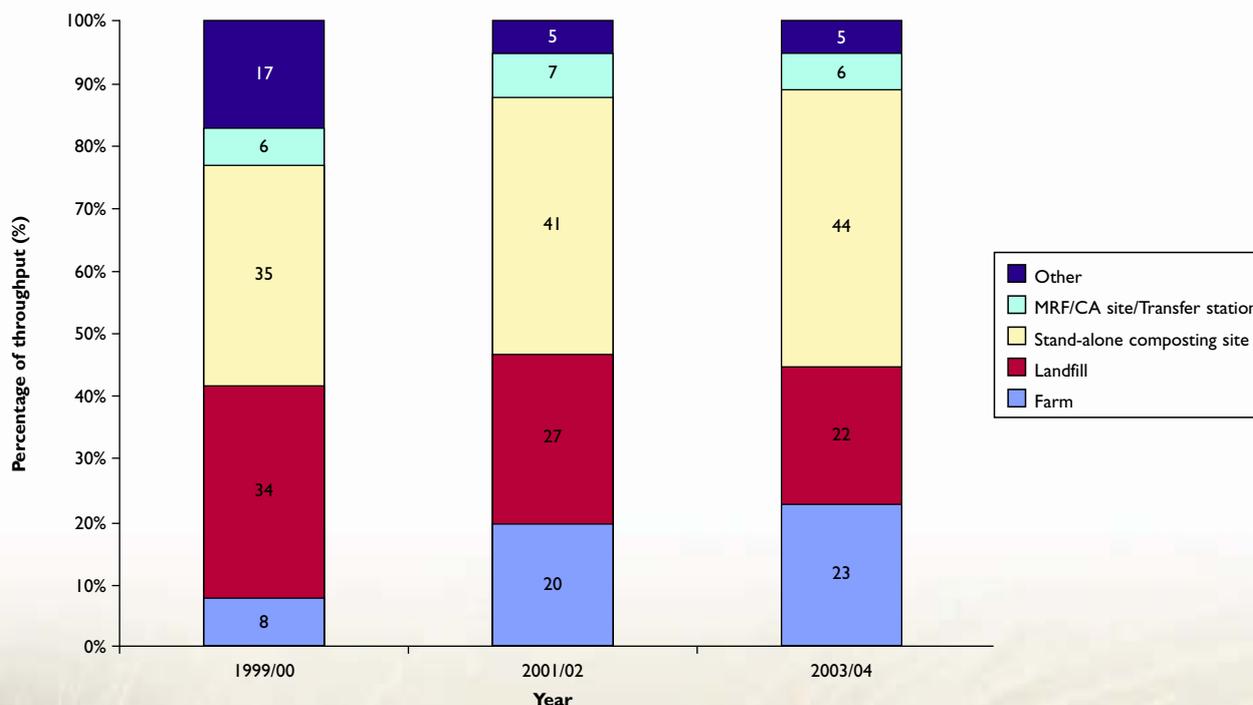
Operator type	2001/02		2003/04	
	No. of operators	No. of sites	No. of operators	No. of sites
Waste Collection Authority	5	5	0	0
Waste Disposal Authority	5	5	0	0
Unitary Authority	9	10	5	5
Dedicated compost producer only	32	40	49	58
Waste Management Company	30	72	37	85
Agricultural	28	73	44	165
Water Company	2	2	2	2
Horticultural	0	0	3	3
Forestry	4	5	0	0
Other	5	6	6	7
Total	120	218	146	325

Of the 325 composting sites in the UK, 189 were located on a farm (of which 173 met the definition of an on-farm site used in this report), 48 were on landfill sites and 64 were stand-alone composting facilities. The remaining 24 sites consisted of transfer stations, material recovery facilities (MRF), sewage treatment works and a mixture of locations. In terms of location, the largest growth was seen in sites situated on a farm, which increased from 96 sites in 2001/02 to 189 sites in 2003/04, but a sizable increase was also observed in stand-alone composting facilities rising from 46 sites to 64 sites over the same period.

Figure 5.5 depicts the proportion of wastes composted at different locations in 1999/01, 2001/02 and 2003/04. Forty-four percent of wastes were composted at stand-alone facilities during 2003/04, 22 % at landfill sites and 23 % on-farm. The trend shows that the proportion processed at landfill sites has decreased over the last few years,

falling from 34 % in 1999/01 to 22 % in 2003/04. The proportion of organic wastes processed at stand-alone composting facilities has steadily increased from 35 % to 44 %, and the proportion of waste processed at farms increased from 8 % to 23 %.

Figure 5.5 Percentage of wastes processed at composting facilities based in different locations in 1999/00 and 2003/04



Note: Sites located at a farm may relate to the categories of either 'on-farm' or 'centralised' used in this survey.

Analysis of operator type against a number of factors including average annual throughput and proportion of waste composted showed that although overall throughput and number of sites had increased since the last survey, the profile of the industry remained relatively unchanged (Table 5.5).

Table 5.5 Operator type, number of sites per operator and annual throughput in 2001/02 and 2003/04

Company type	2001/02			2003/04		
	Mean no. of sites per operator	Most common annual throughput category (tpa)	Percentage of total wastes composted	Mean no. of sites per operator	Most common annual throughput category (tpa)	Percentage of total wastes composted
Dedicated compost producer only	1.2	5,000-10,000	37 %	1.1	5,000-10,000	36 %
Waste company	2.4	2,000-5,000	40 %	2.3	2,000-5,000	40 %
Agriculture	3.6	<1,000	10 %	3.7	<1,000	13 %
Other	1.1	n/a	13 %	1.0	n/a	9 %

5.5 Process type

Composting facilities were categorised according to the type of process undertaken. These were classified as:

- Open air mechanically turned windrows, rows ('windrows') of organic waste which are 'turned' periodically to aerate the waste as it degrades;
- Covered mechanically turned windrows, rows ('windrows') of organic waste which are 'turned' periodically to aerate the waste as it degrades and are covered by being either fully enclosed in a building or partially covered by a roof;
- Static pile processes, which did not involve turning the waste but could be either passively or actively aerated;
- In-vessel, which are enclosed composting systems with some degree of automated process control, e.g. in a container. They usually enable a greater level of control of the composting process compared to windrows systems.

There were some sites that used more than one system (e.g. turned windrow, followed by a static period or in-vessel followed by a turned windrow), where this was the case the process was defined by whatever system was used during the actively managed phase.

Open-air mechanically turned windrows remained the most dominant composting process at both centralised and on-farm sites. This relatively low technology method was used at 278 of the 325 sites, accounting for 82 % of the total annual throughput in 2003/04 (81 % of centralised throughput, 89 % of on-farm throughput).

In-vessel systems were used at 22 sites and accounted for 12 % of the annual throughput (Table 5.6). Comparison of processes at centralised sites (Table 5.7) with 2001/02 showed that the technologies used had changed very little. Although the number of sites employing in-vessel systems increased from 12 to 18, which collectively represented an increase in annual throughput from 0.17 Mt in 2001/02 to 0.24 Mt, they accounted for around 20 % of the 0.31 Mt increase in total wastes composted in the UK since the 2001/02 survey.

Table 5.6 Wastes composted by different processes for all sites across the UK in 2003/04

Process	No of sites	Quantity composted in the UK ('000 tonnes)	Percentage of total composted in the UK (%)
Open air mechanically turned windrow	278	1,608	81.6
Covered mechanically turned windrow	6	18	<1.0
Static pile with aeration	3	34	1.7
Static pile without aeration	13	57	2.9
In-vessel	22	236	12.0
Other	3	19	<1.0
Total	325	1,972	100.0

Note: One site had a separate in-vessel and windrow process, which was classified in the in-vessel category. The 'other' process category includes anaerobic digestion and vermicomposting.

Table 5.7 Comparison of composting processes in 2001/02 and 2003/04 across the UK at centralised sites only

Process type	2001/02		2003/04	
	No of sites	Percentage of total composted in the UK (%)	No of sites	Percentage of total composted in the UK (%)
Open air mechanically turned windrow	104	78.5	115	80.7
Contained windrow	1	0.2	4	<1.0
Static pile with aeration	3	2.8	3	2.0
Static pile no aeration	10	3.5	8	3.0
In-vessel	12	11.2	18	12.9
Other	2	3.7	1	<1.0
Total	132	100.0	149	100.0

Note: One site had a separate in-vessel and windrow process, which was classified in the in-vessel category.

5.6 Standards

Composting site operators were asked whether the compost produced at their site complied with any of the following standards:

- British Standards Institution (2002) Publicly Available Specification for Composted Products (PAS100)
- EU Eco-label for Soil Improvers and Growing Media
- Henry Doubleday Research Association Organic Standards for Landscape and Amenity Horticulture
- Soil Association Standards for Organic Food and Farming

Additionally, all producers were asked whether they had obtained independent certification or were in the process of obtaining it during 2003/04.

Overall, there were 74 sites in the UK who stated that their products complied with at least one of the specified standards. These can be broken down into:

- Sixty-seven sites complied with one standard
- Five sites complied with two standards
- Two sites complied with three standards

Of the 51 composting sites that stated their product complied with the PAS100:

- Thirteen were certified
- Thirty-four were in the process of obtaining certification (four joined the scheme after April 2004)
- Four had an 'other state of compliance'. (These sites were not in the process of obtaining independent certification)

Table 5.8 Standards scheme compliant sites in 2003/04

Standard	Number of compliant sites
PAS 100	51
EU Eco-label	2
HDRA	1
Soil Association	29
Total	83

The aggregated annual throughput in 2003/04 for sites that stated they complied with any independently certified standard scheme was 0.88 Mt, approximately 45 % of all wastes composted in the UK. Sites that stated they complied with BSI PAS 100 composted a total of 0.67 Mt during 2003/04, approximately 34 % of all wastes composted. However, it should be noted that many of these sites were in the process of certification, for example the annual aggregated throughput for sites at different stages of the BSI PAS 100 certification process was:

- Certified (0.19 Mt);
- In the process of attaining certification (0.42 Mt);
- Other state of compliance (0.06 Mt) (these sites were not in the process of obtaining independent certification).

5.7 Planning permission and waste management licensing

Composting site operators were asked to provide information on whether they had planning permission for the site and whether they were operating under a waste management licence or an exemption. For licensed sites, the parameters their licence required them to monitor were requested. Opinions were also sought on the planning and licensing systems.

Respondents provided information on planning permission for 322 sites and on waste management licence status for 318 sites. Table 5.9 and Table 5.10 show the planning permission and waste management licence status for both centralised and on-farm sites in 2003/04, respectively.

Table 5.9 Planning permission status for centralised and on-farm sites in 2003/04

Planning permission status	Number of centralised sites	Number of on-farm sites	Number of other sites	Total number of sites (all types)
Granted	135	107	3	245
Awaiting	5	1	0	6
Not required	7	63	0	70
Other	1	0	0	1
Total	148	171	3	322

Table 5.10 Waste management licence status for centralised and on-farm sites in 2003/04

Waste management licence status	Number of centralised sites	Number of on-farm sites	Number of other sites	Total number of sites (all types)
Granted	124	15	2	141
Awaiting	5	1	0	6
Exempt	14	154	1	169
Other	2	0		2
Total	145	170	3	318

Table 5.9 shows the vast majority of centralised sites (91 %) had been granted planning permission, compared to just under two-thirds of on-farm sites (63 %). For the on-farm sites that did not require planning permission, this is most likely due to the local planning authority not considering composting to be a 'material change in use of the land'.

Table 5.10 shows the vast majority of centralised sites had either been granted a waste management licence or had applied for a licence and were awaiting a response (89 %). Whereas the vast majority of on-farm sites (90 %) had obtained a waste management licence exemption; this was most likely due to their small annual throughput and use of composted material on-site.

Table 5.11 shows the annual throughput in 2001/02 and 2003/04 for centralised and on-farm sites against the different status categories for planning permission and waste management licences. In both survey years centralised sites that had been granted planning permission and held a waste management licence accounted for the vast majority of wastes composted. However, it is interesting to note that the proportion of wastes composted by centralised sites holding a waste licence fell from 84 % in 2001/02 to 78 % in 2003/04, whilst the proportion of wastes composted at on-farm sites with a licence exemption increased from 6 % to 11 %.

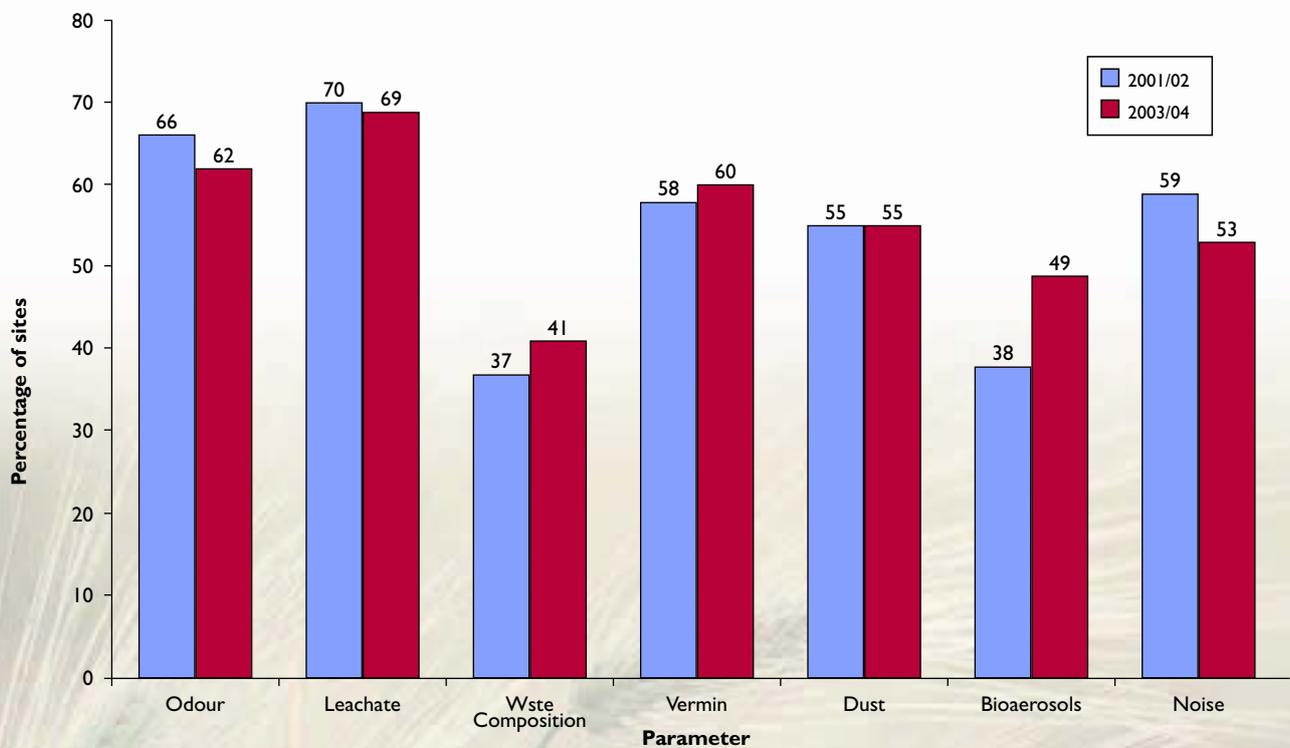
Table 5.11 Quantity of wastes composted and planning and licensing status of centralised and on-farm sites in 2001/02 and 2003/04

Status	2001/02			2003/04		
	Centralised sites (throughput in '000 tonnes)	On-farm sites (throughput in '000 tonnes)	Total (throughput in '000 tonnes)	Centralised sites (throughput in '000 tonnes)	On-farm sites (throughput in '000 tonnes)	Total (throughput in '000 tonnes)
PLANNING PERMISSION						
Granted	1,364	77	1,441	1,572	173	1,745
Awaiting	90	20	110	87	6	93
Not required	55	29	84	49	62	111
Other	14	2	16	10	0	10
Total	1,523	128	1,651	1,718	241	1,959
WASTE LICENCE						
Granted	1,399	20	1,419	1,499	36	1,535
Awaiting	13	0	13	62	2	64
Exempt	77	108	185	100	203	303
Other	34	2	36	9	0	9
Total	1,523	130	1,653	1,670	241	1,911

Note: This table refers to centralised and on-farm site types only, the 'other' site type category has been excluded. Total throughput differs from that presented earlier as not all sites provided information on planning permission and waste management licence status.

As part of the waste management licence conditions, composting site operators are required to monitor certain parameters to help ensure that wastes are being effectively composted and that no harm is being caused to human health or the environment. Different sites may be required to monitor one or more parameters, and different combinations of parameters are likely to depend on local conditions. The most common parameters may include odour, leachate, vermin, dust, noise and bioaerosols. Figure 5.6 shows the percentage of sites that were required to monitor individual parameters. The percentage of sites required to monitor bioaerosols increased from 38 % in 2001/02 to 49 % in 2003/04, whilst the percentage of sites monitoring noise fell from 59 % to 53 %. Overall, around half of sites (48 %) were required to monitor between one and four different parameters, whilst the other half (52 %) were required to monitor between five and eight different parameters.

Figure 5.6 Percentage of sites required to monitor parameters as part of the site's waste management licence in 2001/02 and 2003/04



5.8 Mechanical and biological treatment

Mechanical and biological treatment (MBT) technologies were treated separately from the composting data in this report. There were only six respondents that used MBT technologies in the 2003/04 survey, of which, only one used anaerobic digestion. Collectively, these processed a total 71,490 tonnes of mixed wastes.

Details from all the respondents are shown in Table 5.12. The tonnage of wastes processed was similar to that reported in 2001/02 (84,852 tonnes, data not shown). The reduction is largely attributed to two sites that responded in 2001/02, which have since reduced the quantities processed.

Of the six sites that responded four sent the stabilised material to very low-value end uses (landfill or restoration), and one producer sent the material to be used in agriculture.

Table 5.12 Mechanical and biological treatment summary for 2003/04

Category	Response
Total wastes mixed wastes composted (tonnes)	71,490
Number of sites	6
Technique	Anaerobic (1) Aerobic (4) No response (1)
Method of Stabilisation	Prior to composting (2) No response (4)
Quantity of stabilised material after separation / post treatment (tonnes)	22,162
End uses	Landfill cover (2) Land restoration (1) Agriculture (1) Daily cover and land restoration (1) No response (1)

6 Products and market sectors

The sustainability of the composting industry is inextricably linked to the continued development of markets for composted products. It was therefore important that this survey established trends in what composted products were being produced and the market sectors into which they were being sold. In view of that, producers were asked for detailed information about their products including, the type, quantity, standards, distribution and markets⁷.

6.1 Product types

Composted products tended to be defined by a combination of both their intrinsic properties and their end uses. To ensure consistency compost producers were provided with definitions of compost products (these are included in Appendix I). Details of compost product types and quantities were requested. Monitoring the flow of products and obtaining accurate data on end uses was difficult as producers may sell their product in bulk to a third party, which may then be manufactured into a different product before distribution and end-use. For instance, a producer may sell a soil conditioner to a third party, which is later manufactured into topsoil or growing media. As this survey recorded composted material distributed by the producer it is likely to overestimate soil-conditioner whilst underestimating refinement into other products such as top-soil manufacture and growing media. Commercial sensitivity was also highlighted as an issue for some producers who were unable to provide full details. In light of these caveats data on product type and end-use should be treated as estimates only.

The majority of compost was manufactured as a soil conditioner (61 %), and mulch was the second largest category (16 %). The remainder (23 %) consisted of constituent in growing media, ingredient in manufactured topsoil and other products. Table 6.1 illustrates the product type and quantities in 2001/02 and 2003/04, and shows an increase in the quantity of compost products for most categories, with the exception of 'ingredient in manufactured topsoil' and 'other product.' Although the survey recorded a decrease in compost used as an 'ingredient in manufactured topsoils', this did not reflect any third-party manufacturing of top-soils as explained above, and hence 'ingredient in manufactured top-soils' may have been absorbed into the soil conditioner category. A large proportion of the 'other product' category was landfill cover, and the data showed this had remained relatively static since the previous survey.

⁷Stabilised residues from mechanical and biological treatment (MBT) processes are not included here but are dealt with in Section 5.8. As the 2001/02 results included stabilised residues used on landfill in the 'Product and Market Sector' section, these have been removed from the 2001/02 data presented here to allow comparison with 2003/04 data.

Table 6.1 Quantity of composted products produced in the UK in 2001/02 and 2003/04

Product	2001/02		2003/04	
	Quantity ('000 tonnes)	Percentage of total (%)	Quantity ('000 tonnes)	Percentage of total (%)
Mulch	117	12	188	16
Soil conditioner	562	60	722	60
Constituent in growing media	67	7	102	9
Turf dressing	6	1	15	1
Ingredient in manufactured topsoil	95	10	68	6
Other product	99	10	94	8
Total	946	100	1,189	100

Note: The 2001/02 product total differs from that previously reported as stabilised biowastes has been removed from product categorisation

6.2 Product distribution

Compost producers were asked what quantities of their products were used on-site, sold or distributed without charge.

Around 40 % of products were sold, 10 % were distributed without charge and 50 % were used on-site⁸ (Table 6.2). Comparison with the previous survey shows that although the proportion of product sold had fallen from 47 % (2001/02) to 40 % (2003/04), the quantity sold remained relatively static at around 0.47 Mt. Products used on-site went mainly to agriculture or landfill sites. As outlined above, use on landfill was similar to the previous survey. Agriculture accounted for the majority of growth in on-site use, which reflects the growth in on-farm composting (see Section 3), and is supported by the growth in end-use by the agricultural sector (see Figure 6.1).

Table 6.2 Product sold, used on-site or distributed without charge in 2001/02 and 2003/04

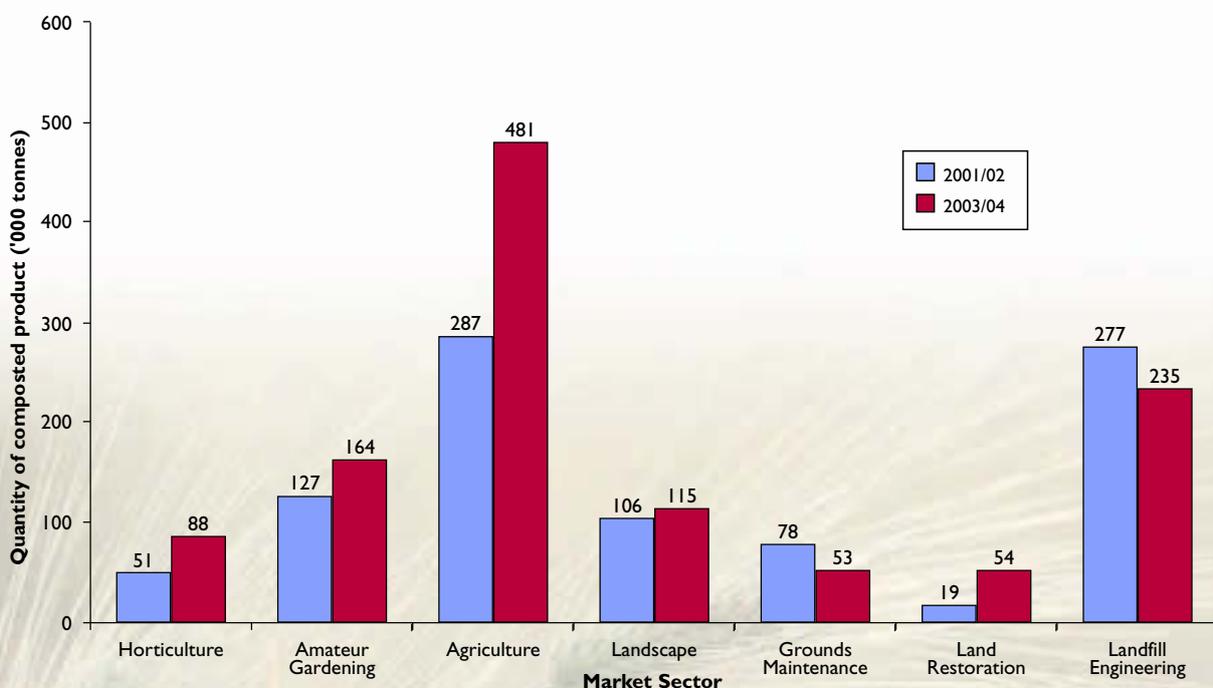
Product Distribution	2001/02		2003/04	
	Quantity ('000 tonnes)	Percentage of product (%)	Quantity ('000 tonnes)	Percentage of product (%)
Sold	445	47	476	40
On-site	369	39	594	50
Distributed without charge	132	14	119	10
Total	946	100	1,189	100

⁸In order for product to be classified as used on-site, the final destination was the same as where the original waste had been treated. This was usually on a landfill site or agricultural land.

6.3 Market sectors

Compost producers were asked to identify the quantities that went to specific outlets during 2003/04. The same categories were used as in 2001/02 to allow comparison. The data were split into seven market sector categories. Four of the categories; horticulture, landscape, amateur gardening and grounds maintenance were considered to be markets that could obtain a higher pecuniary value, but tended to be produced in smaller quantities with specific functions. Agriculture, landfill engineering and land restoration were considered to be low-value bulk outlets, distributing large quantities of compost often at lower or zero value. The categories of landfill cover, landfill engineering and landfill restoration were combined to give one category for landfill engineering.

Figure 6.1 Distribution of composted products in 2003/04



Note: In previous surveys the 'landfill engineering' category of composted products included stabilised biowastes from MBT processes. In this survey stabilised biowastes from MBT processes have been considered separately from wastes composted (see Section 5.8). As a result, the quantity of composted product that went to landfill engineering in 2001/02 is less than previously recorded.

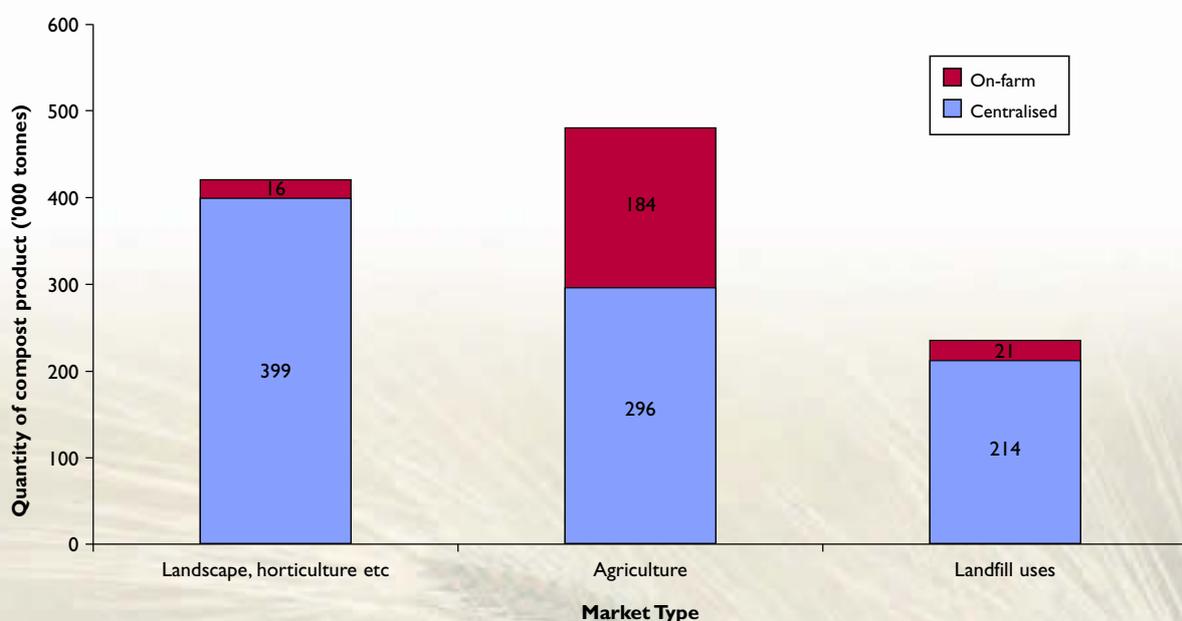
In total there were 1.19 Mt of composted products distributed to different outlets in the UK (Figure 6.1). Agriculture was the largest outlet where 40 % (0.48 Mt) of compost product was used. Compost that went to grounds maintenance, horticulture, amateur gardeners and landscapers combined accounted for 36 % of product. The remainder went to land restoration, landfill cover and landfill engineering combined (24 %).

There were a number of changes reported since 2001/02. The most significant increase in quantity was observed in the agricultural sector; which increased from 0.29 Mt in 2001/02 to 0.48 Mt in 2003/04 (67 % increase).

Compost used in land restoration almost tripled, although it remained one of the smallest sectors in terms of quantities used. An increase was also reported for horticultural and amateur gardening outlets (70 % and 28 %, respectively), whilst there was a reduction in quantities going to grounds maintenance and landfill engineering.

Figure 6.2 illustrates the product markets and outlets that were produced by on-farm and centralised sites during 2003/04. The categories have been condensed into material that went to agriculture, landfill uses or other markets e.g. landscape and horticulture. The vast majority of wastes composted at on-farm sites were used in agriculture (83 %). For wastes composted at centralised sites, 44 % went to landscape and horticulture, 24 % went to landfill engineering and 32 % went to agriculture. This showed that the growth observed in the agricultural market was not only attributable to a growth in on-farm composting, but all sites have relied more on this outlet, as compost production has increased.

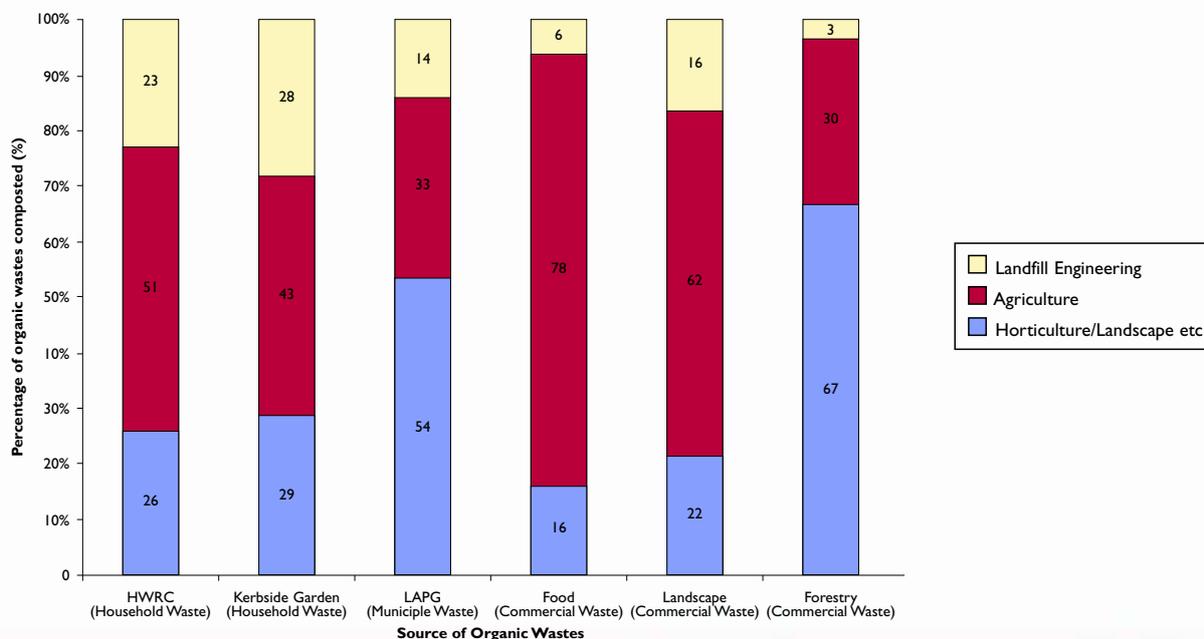
Figure 6.2 Distribution of products from centralised and on-farm sites in 2003/04



Note: The graph excludes the 'land restoration' and 'other' category as quantities reported were small

The feedstock source has a direct bearing on the quality of the compost, and hence the use of the final product. An attempt was made to link the feedstock source to the destination of the end product. This was relatively easy where waste originated from one source, or the product was sent to a single market sector: However, many sites received wastes from several sources and sent the resultant products to multiple destinations. As the material is often mixed during the process, then many products cannot be traced back to a single source. Therefore, the categories presented linking feedstock to compost use (Figure 6.3) were based on a relatively small sample size, and should be treated as approximations only.

Figure 6.3 Source of organic wastes composted and end-use of the composted material in 2003/04



Notes: Where it was not possible to split material between high value and landfill or horticulture/landscape and agriculture a 50 % split was assumed.
 LAPG – local authority parks and gardens waste

Figure 6.3 shows that distribution outlets were similar for composted material derived from green wastes collected from HWRC and the kerbside, with agriculture being the main route for both sources. Agriculture was also the main destination for wastes sourced from the commercial food sector and landscaping. The majority of composted green wastes from local authorities’ parks and gardens went to a horticultural/landscaping outlet, the majority of which was probably used by the authorities in their parks and gardens maintenance.

Over the last few years there have been considerable developments in European and national waste management policies, and a number of these developments focus on managing biodegradable wastes more sustainably. The Landfill Directive (EC/31/99) sets overall targets for the UK to meet a phased reduction in the quantity of biodegradable waste that is landfilled; 65 % of biodegradable municipal waste must be managed by processes other than landfill by 2020⁹. The Waste and Emissions Trading (WET) Act 2003 provides the framework for the Landfill Allowance Trading Scheme (LATS), where local authorities responsible for disposal are allocated landfill allowances for biodegradable wastes designed to meet the diversion targets laid down in the Landfill Directive. In addition to LATS, local authorities also face pressures to improve their waste management performance from the Household Waste Recycling Act (2003) and the recycling and composting targets set out in the respective waste management strategies for England, Northern Ireland, Scotland and Wales. As a result of these developments, composting will need to play an increasingly important role in treating the UK's biodegradable municipal waste that is currently landfilled.

During the last decade the UK composting industry has grown considerably, and this survey reports continued expansion, albeit at a slower rate than that observed in previous years. Over the last two years the average annual growth rate in wastes composted was around 10 %. In 2003/04 1.97 Mt of biodegradable wastes were composted, of which 1.44 Mt were household wastes. This should be considered against estimated arisings for the combined green and kitchen waste fraction of around 13.0 Mt in the UK¹⁰. So despite considerable and sustained growth over the last few years, only just over one-tenth of household green and kitchen waste arisings were composted in 2003/04.

Overall the industry was characterised by relatively small-scale centralised sites, and very small-scale on-farm sites. Centralised sites continued to dominate the industry in terms of wastes composted, accounting for 1.71 Mt. Although a small number of centralised sites operated at a large-scale (processing in excess of 25,000 tpa), the majority were considerably smaller. Most sites run by 'dedicated compost producers' (organisations whose primary activity is compost production) composted between 5,000-10,000 tpa, whereas most sites run by 'waste management companies' (organisations involved in a range of waste management activities that also operate composting sites) composted between 2,000-5,000 tpa. In terms of new sites, the main area of growth was in on-farm composting, increasing from 78 sites in 2001/02 to 173 sites in 2003/04, and the proportion of total composted at on-farm sites increased from 8 % to 13 %. On-farm sites operated at a very small-scale; half of sites processed \leq 1,000 tpa and over three-quarters processed \leq 2,000 tpa. Whilst this growth in the on-farm sector is an important development for the industry, the proliferation of small centralised and on-farm sites needs to be complemented with the development of larger-scale sites if the industry is to provide processing capacity that will significantly contribute to the landfill diversion targets.

Compared to previous years the growth rate in annual throughput has decreased while the growth rate in the number of sites has increased, which is explained by the relatively large increase in on-farm sites compared to centralised sites. There is likely to be a number of factors that have driven the expansion of the on-farm composting sector. Many on-farm sites utilised the composted material on-site, removing the need to market the end product. The vast majority of on-farm sites qualified for a waste management licence exemption (90 % of sites) which helps limit costs, and planning permission was not always required (37 % of sites). When planning permission for on-farm sites is required, it tends to be easier and quicker to obtain than for larger centralised sites. In addition to these drivers, many on-farm sites offer greater potential to adhere to the proximity principle compared with larger centralised facilities. These factors are likely to contribute to continued development of the on-farm sector; whilst the lengthy processes involved in obtaining planning permission and waste management licences for centralised sites and ABPR compliance (where catering wastes and animal by-products are treated) are likely to impede the development of the centralised composting sector.

The industry continued the established trend of sustaining growth with a reliance on green wastes for composting

⁹Measured against waste arisings in the baseline year of 1995.

¹⁰Estimated from waste arisings in England, Northern Ireland, Scotland and Wales, allowing 2 % growth per annum to estimate for 2003/04. Based on the assumption that 20 % of household waste is garden waste and 17 % is kitchen waste (Parfitt, 2002).

(Slater and Frederickson, 2001). Approximately 95 % of municipal waste composted was garden waste, and over half of non-municipal waste composted was derived from forestry and landscaping activities. Virtually all household wastes composted were green waste, and the majority of kerbside collections collected garden wastes only, with a small number accepting a mixture of garden and kitchen wastes. Of the estimated 7 Mt of household garden waste arisings in 2003/04¹¹ approximately one-fifth was composted, whilst the estimated 6 Mt of kitchen wastes remained a largely untapped resource by the composting sector. One of the main reasons for this is the lack of appropriate composting facilities for processing kitchen wastes. The reliance on green wastes has given rise to the dominance of relatively low-technology open-air windrows. Over 80 % of sites utilised open-air windrows processing over 80 % of the total quantity of wastes. Open-air windrows are not compliant with the requirement for enclosed systems under the Animal By-Products Regulations 2003, and thus are not suitable for the composting of food wastes.

There is some evidence to show that suitable sites for the composting of food wastes are starting to develop, for example the number of sites employing in-vessel technologies increased from 12 in 2001/02 to 18 in 2003/04. This survey coincided with the introduction of The Animal By-Products Regulations 2003, and in the first year of regulation 14 facilities were undergoing validation approvals for the processing of catering (food) wastes by the State Veterinary Service. Although this expansion into food waste composting is positive, it is still at a very early stage of development, and rapid expansion of food waste composting capacity will be required to contribute to the required landfill diversion targets. This rapid expansion requirement is set against the tension of lengthy planning and licence approval processes outlined earlier.

Developing food waste composting capacity also requires appropriate kerbside collection systems. In 2003/04 most kerbside collection schemes were 'green waste only', with only a tiny fraction of schemes collecting food waste. The characteristics of food wastes differ from green wastes in that they have a greater density and degrade more readily. This has implications for kerbside collection systems, and systems designed to collect garden wastes are unlikely to be the most efficient or effective way of collecting large quantities of food wastes.

In terms of green waste collected for composting, household waste recycling centres continued to be the most dominant collection method (accounting for 75 % of household waste collected for composting), although quantities collected via this route remained similar to that recorded in 2001/02. The main area of growth in terms of quantities collected was green waste collected from the kerbside, which more than doubled since the previous survey. It is also likely that the quantities collected by these schemes will rise next year, as over half of them had not been in operation for the full survey period.

There were large geographical variations in the quantity of wastes composted across the UK. The largest increase in throughput was observed in England. However, the quantity of material processed tripled in Scotland and doubled in Wales, and all nations were similar on a per capita basis. The greater growth may be due to initiatives targeted at the biodegradable waste fraction. Scotland has already implemented new waste management regulations lowering the waste management licence exemption limit to 400 tonnes at any one time from 1000 cubic metres, and uses the BSI PAS 100 as a benchmark for distinguishing compost product from waste. There are also several key differences in Wales, which has a separate target for source separated compostable wastes, different planning guidance and funding routes, and will not allow local authorities to trade biodegradable landfill allowances.

A large proportion (45 %) of biodegradable wastes were composted at sites that met at least one nationally recognised standard. Compost producers recognise the benefits of voluntary standards and self-regulation. Objective technical standards and third party compliance schemes have increased the overall confidence in the industry. Specifications such as the British Standards Institution Publicly Available Specification for Composted Products (PAS100) can provide a platform to expand markets, ensuring consistent product quality. However technical standards could play a much wider role, for example, The First Soil Action Plan for England (2004-2006) encourages the return of organic matter to the soil, and protection against contamination, which could be

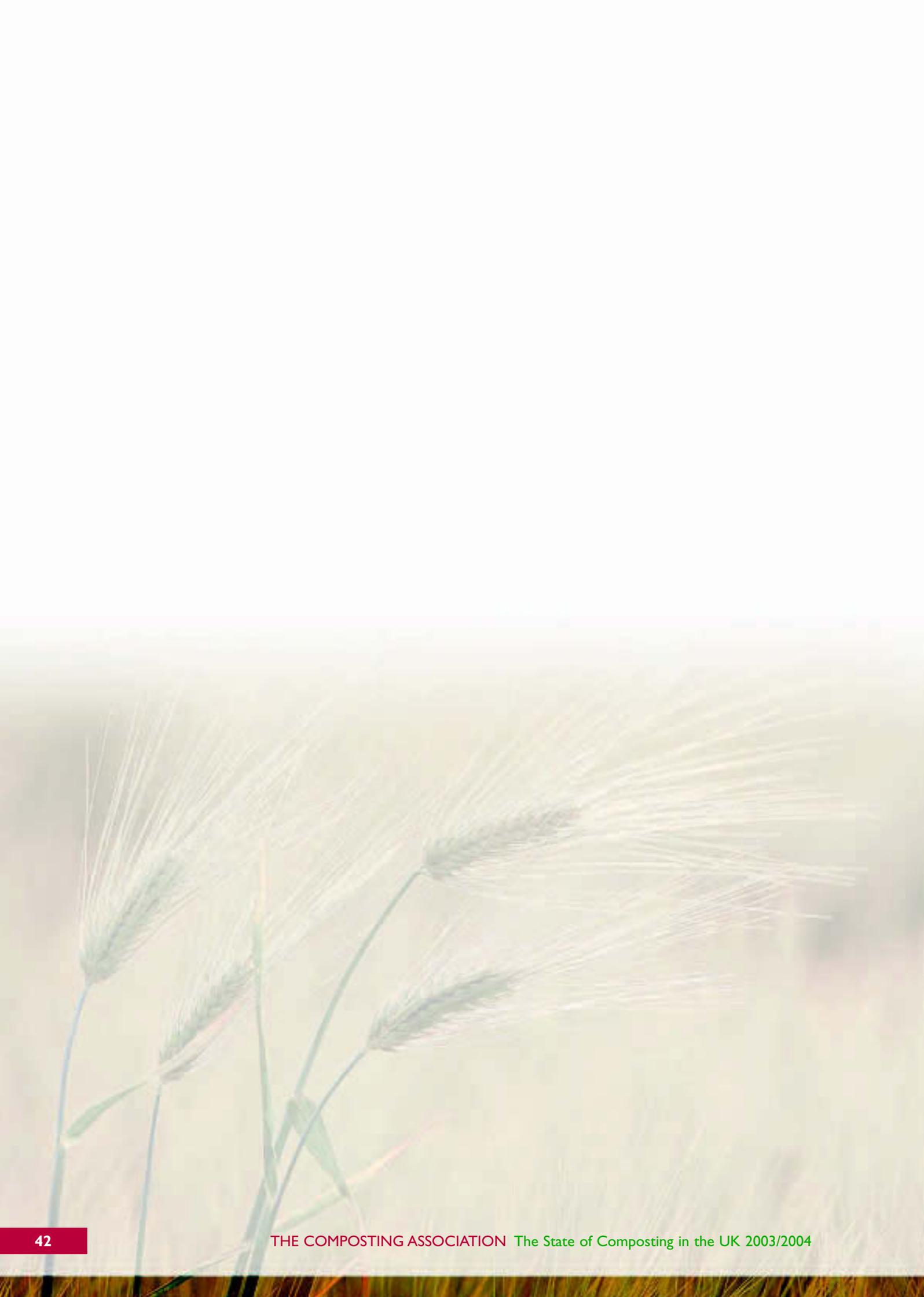
¹¹Estimated from waste arisings in England, Northern Ireland, Scotland and Wales, allowing 2% growth per annum to estimate for 2003/04. Based on the assumption that 20% of household waste is garden waste (Parfitt, 2002).

achieved through the promotion of certified composts.

Mechanical and Biological Treatment (MBT) is a well-established technology throughout Europe, and many countries that have implemented separate organic waste collection schemes also rely on MBT to stabilise residual biodegradable waste prior to landfill. Only six operational sites were recorded by the survey, and these treated a total of 71,000 tpa. Nevertheless, there is considerable interest in the UK about the potential future role of MBT, sparked by recent policy measures together with potential fines for local authorities failing to meet landfill diversion targets. However, there are many uncertainties about the role of MBT, especially in relation to the use of stabilised residues within the context of the EU's developing Thematic Strategy on Soil Protection. The technology could make a significant contribution to meeting the biodegradable limits set under the Landfill Allowance Trading Scheme (LATS) by enabling large volumes of biodegradable wastes to be treated. However, the uncertainties are likely to make them difficult to finance, especially as MBT plants are unable to claim renewable obligation certificates (ROCs) which exclude refuse derived fuel (RDF), and residues may not meet the definition of compost required to count towards Best Value Performance Indicators 82b (BVPI 82b).

Compost product increased by 27 % from 2001/02 to 2003/04, which has also coincided with a reduction (18 %) in the quantity of compost being used on landfill sites. Agriculture became the main beneficiary absorbing a large proportion of the increased compost product, and is likely to play a key future role, as more of the agricultural market will have to be secured against competing organic wastes. The Common Agricultural Policy reforms will result in farmers being paid a single payment, dependent upon the area of land instead of the quantity of crop produced or animals reared. This will provide further opportunities for diversification activities including composting. Soil management and compost quality will become key issues because payments will be dependent on compliance across environmental legislation, and farmers will have to adhere to soil management guidance.

Over the last ten years the UK composting industry has grown considerably. However, in order to meet the challenges ahead the industry needs to expand the rate of growth observed over the last two years, but it also needs to develop its capacity to process both the green waste and food waste fractions. Results for 2003/04 reported a considerable growth in small, dispersed facilities, which are beneficial as they enable the treatment of waste near to where it is produced. This growth needs to be complemented by the development of large-scale facilities that are able to treat more difficult and greater quantities of feedstocks. The costs of food waste treatment are affected by increased legislative demands and the necessity of in-vessel technologies. The capital investment required (and on-going operational costs) can only be justified to finance lenders, if there is a guaranteed, long-term supply of large quantities of organic wastes, and end-uses for the composted products. Inevitably, diverting difficult municipal feedstocks from landfill will necessitate larger facilities, which will require the support of the planning authorities and regulators, coupled with more local authorities providing appropriate kerbside collection facilities.



Amateur gardeners

These are hobby gardeners that buy compost through retail outlets, household waste recycling centres (or make their own).

Biodegradable materials

These are materials capable of undergoing biologically mediated (either aerobic or anaerobic) decomposition.

Bioremediation

The biological treatment of land to remove, stabilise or isolate soil-polluting substances.

Bring collection scheme

A collection method that requires householders to take their waste (or other recyclables) to a central point such as a household waste recycling centre or civic amenity site.

Centralised site

A large composting site which (for the purpose of this report) processed in excess of 5,000 tpa. These sites normally operated under a waste management licence, received waste from external sources and either used the compost on-site or distributed it externally.

Commercial waste

Waste arising from premises used wholly or mainly for trade business, sport, recreation or entertainment, excluding municipal and industrial wastes.

Compost

Solid particulate material that is the result of composting, that has been sanitized and stabilized and that confers beneficial effects when added to soil, used as a component of a growing medium, or is used in another way in conjunction with plants.

Composting

The process of controlled biological decomposition of biodegradable materials under managed conditions that are predominantly aerobic and allow the development of thermophilic temperatures as a result of biologically produced heat.

Daily cover

Materials that are spread over landfilled waste on a daily basis to prevent pest/odours and dilute toxicity.

Dedicated compost producer

Organisations whose primary activity is compost production.

Exempt composting site

A composting site that is registered with (but not licensed by) the regulator and does not require a site licence under The Waste Management Licensing Regulations 1994.

Grade

A term used to describe a range of compost particle sizes, which usually result from screening the product. The particle size can be described in units of screen aperture size (usually in mm) or as 'fine', 'medium', or 'coarse'.

Green waste

Organic waste such as grass clippings, tree cuttings, leaves, which arise from gardens, parks or landscaping activities.

Grounds maintenance

The up-keep of 'green spaces' (mainly local authority), which includes those associated with highways.

Growing medium

A material (other than soils) used alone or in specific mixtures to grow plants in containers.

Horticulture

The term describes an industry of professional growers that use intensive systems to grow flowers, nursery stock or fruit and vegetables.

Household waste

Waste originating from the household that is collected at the kerbside, household waste recycling centres or other bring sites. It includes litter, bulky and hazardous household substances.

HWRC

Household Waste Recycling Centre

Ingredient in manufactured top/subsoil

Compost or other material mixed with poor quality soils or other material (e.g. sand or construction and demolition fines) to produce topsoil prior to landscaping applications.

In-vessel composting system

An enclosed composting system with some degree of automated process control.

Kerbside collection scheme

A collection method where organic wastes (or other recyclables) are regularly collected from households, commercial and industrial premises, normally at the end of curtilage of the property.

Land restoration

The process of improving the quality of land, or augmenting inadequate soil e.g. brownfield sites or mining areas.

Landscaping

The development or construction of soft landscapes (mainly private sector), including those associated with highways.

Licensed site

A composting site that is licensed under The Waste Management Licensing Regulations 1994. It must be operated within the terms and conditions that are stated by the regulator in the site licence.

Mechanical and Biological Treatment (MBT)

A process that involves the biological treatment of mixed wastes, either aerobically or anaerobically. The biological process is usually preceded by mechanical separation, but this may be carried out after biological treatment.

Mt

Millions of metric tonnes

Mulch

Large particles (usually timber/wood products) applied to the surface, to suppress weeds, retain moisture, prevent soil erosion or for decorative purposes.

Municipal waste

In the UK, this includes household waste plus any other wastes collected by a Waste Collection Authority, or its agents, which includes municipal parks and gardens waste, beach cleansing waste and any commercial and industrial waste for which the collection authority takes responsibility.

Non-household waste

Wastes that are collected from parks and gardens or other waste collected by local authorities, which did not arise from households.

On-farm sites

Composting sites that were situated on farms, tending to process less than 5,000 tonnes of wastes per year that were normally exempt from a waste management licence and used the compost on-site.

Open-air turned-windrow

A composting technology that involves arranging the biodegradable waste into long, low rows ('windrows') that are usually 'turned' periodically to aerate waste as it degrades.

Producer

A business enterprise, organization, community initiative or person(s) that is responsible for the production of compost.

Screening

A stage during the composting process that involves sorting compost particles according to their size in order to achieve one or more separate grades.

Soil improver

Material added to soil in-situ primarily to maintain or improve its physical properties, and which may improve its chemical and/or biological properties or activity.

Sub categories: soil conditioner; mulch.

Stabilised biowaste

Material resulting from mixed (unsorted) waste composting that does not have much oxidisable carbon and therefore low microbial activity, which is characterised by low oxygen uptake rates, and low carbon dioxide and heat evolution rates.

tpa

Metric tonnes per annum

Turf (top) dressing

Compost that has been screened to a fine grade then used to improve the establishment and growth of turf.

Unitary Authority

A local authority charged with the duties of both waste collection and waste disposal.

Waste

Any substance or object, which the holder discards or intends to or is required to discard.

Waste Collection Authority (WCA)

A local authority charged with the collection of waste from households in its area on a regular basis. It can also collect, if requested, commercial and industrial wastes.

Waste Disposal Authority (WDA)

A local authority charged with providing disposal sites to which it directs the Waste Collection Authorities for disposal of their controlled wastes, and for providing household waste recycling centres / civic amenity sites.

Waste Management Company

For the purposes of this survey, organisations involved in a range of waste management activities that also operate composting sites.

Appendix II

Local Authority questionnaire

The Composting Association is the United Kingdom's membership organisation, promoting the sustainable management of biodegradable resources. It actively promotes the use of biological treatment techniques and encourages good management practices throughout the industry. By advocating a suitable regulatory and economic framework, the Association works to ensure the long-term sustainability of the biological treatment industry.

The Composting Association is the information focal point for the UK biological treatment industry. The Association is in continual dialogue with its members and decision-makers, both in the EU and across the UK to ensure that effective policy, legislation and regulation is developed.

In order to do this we require the most up-to-date information. We would be very grateful if you could complete the questionnaire and return it by the **30th July 2004** using the prepaid envelope enclosed. If you would prefer to fill in an electronic version then please email peter@compost.org.uk or download it from www.compost.org.uk.

This is the only survey directly related to biological treatment that is conducted for the whole of the UK. **It is supported by DEFRA, SEPA, EA, WAG, DoENI and WRAP** and will complement municipal waste statistics.

All replies will be treated confidentially.

Thank you for your time



Section A: Contact Details

If you have any queries than please contact, Peter Davies (Technical Officer), on telephone 0870 160 3278, Fax 0870 160 3280 or email peter@compost.org.uk

A1 - Name and address of Local Authority

NAME MR/MRS/MISS/MS/DR (delete as appropriate)

JOB TITLE

ORGANISATION NAME AND ADDRESS

.....

..... POSTCODE

TELEPHONE FAX

EMAIL ADDRESS

A2 - Local Authority Type

Please tick as applicable:

- Waste Collection Authority
- Waste Disposal Authority
- Unitary
- Other (please specify)

A3 - Involvement with composting?

I. WHAT IS YOUR INVOLVEMENT IN COMPOSTING?

- Responsible for the operation or contractual arrangements of civic amenity/bring sites (answer section B and D)
- Responsible for the operation or contractual arrangements of kerbside collections (answer section C and D)
- Responsible for the operation or contractual arrangements of civic amenity/brings sites and kerbside collections (answer all sections)
- None of the above

II IF NONE OF THE ABOVE ARE APPLICABLE, PLEASE OUTLINE YOUR INVOLVEMENT OR INTEREST IN COMPOSTING AND / OR WASTE COLLECTIONS (USE SECTION D IF NECESSARY) AND RETURN THE QUESTIONNAIRE

.....

.....

.....

.....

Section B: Collection from Civic Amenity Sites

I. QUANTITY OF ORGANIC WASTE COLLECTED FROM CIVIC AMENITY / BRING SITES IN 2003/04

..... tonnes

II. WAS LOCAL AUTHORITY PARK AND GARDEN WASTE ACCEPTED AT CIVIC AMENITY / BRING SITES?

- Yes (go to question IV) No (go to question III)

III. IF **NO**, WHAT QUANTITY WAS COLLECTED BY A DIFFERENT METHOD

..... tonnes

IV. TYPE OF ORGANIC WASTE COLLECTED AT CIVIC AMENITY / BRING SITES

(please tick only one box)

- Household garden waste only
 Local authority park and garden only
 Household garden waste and local authority park and garden waste only
 Household garden and commercial green waste only
 Household garden waste, local authority park and garden and commercial green waste only
 Household garden and other combination (please specify)

V. HOW MANY CIVIC AMENITY / BRING SITES WERE THERE IN 2003/2004?

VI. HAD THE NUMBER OF CIVIC AMENITY / BRING SITES FOR ORGANIC WASTE

- Increased
 Decreased
 Stayed the same
 Don't know

VII. ARE YOU PLANNING ADDITIONAL CIVIC AMENITY / BRING SITES FOR ORGANIC WASTE?

- Yes No Don't Know

VIII. WHAT WAS THE FINAL DESTINATION OF ORGANIC MATERIAL?

- | | |
|---|---|
| <input type="checkbox"/> Landfill cover | <input type="checkbox"/> Land restoration |
| <input type="checkbox"/> Landfill restoration | <input type="checkbox"/> Fuel |
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Other (please specify) |
| <input type="checkbox"/> Landscaping/Horticulture/Grounds maintenance | <input type="checkbox"/> Don't know |

Section C: Collection from the Kerbside

I. DID YOU OPERATE A SEPARATE ORGANIC KERBSIDE COLLECTION OR MIXED WASTE COLLECTION FOR BIOLOGICAL TREATMENT IN 2003/04?

- Yes (please answer all questions) No (go to section D)

GENERAL / HOUSEHOLD DETAILS

Total number of households in region (authority)

Total number of households covered by organic kerbside collection

Estimated number of households participating in kerbside collection

Date scheme started

II. TOTAL QUANTITY OF SEPARATELY COLLECTED ORGANIC WASTE OR MSW COLLECTED FROM THE KERBSIDE FOR BIOLOGICAL TREATMENT IN 2003/04

..... tonnes

III. TYPES OF ORGANIC HOUSEHOLD WASTE ACCEPTED IN ORGANIC KERBSIDE COLLECTION

(please tick all those applicable)

- Household garden waste only (go to question V)
- Household garden and food waste only (go to question IV)
- Household garden and card/paper only (go to question V)
- Household garden, food waste and card/paper only (go to question IV)
- Kitchen only (go to question IV)
- Kitchen and paper/card only (go to question IV)
- MSW (go to question V)
- Other waste accepted (please specify)

IV. WAS THE FOOD (KITCHEN) WASTE COLLECTED?

- Meat inclusive Meat exclusive

V. ORGANIC KERBSIDE COLLECTION FREQUENCY

- Once per week On demand
- Once per month Summer weekly, winter monthly
- Once per fortnight Other (please specify)

VI. ORGANIC KERBSIDE COLLECTION DAY AND VEHICLE

- Organic waste collected same day as residual waste, in same split bodied vehicle
- Organic waste collected same day as residual waste, in the same vehicle in survival bags
- Organic waste collected same day as residual waste, but alternate weeks, using same vehicle
- Organic waste collected same day as residual waste using different vehicle
- Organic waste collected different day from residual waste using different vehicle
- Other (please specify)

VII. CONTAINER TYPE FOR ORGANIC WASTE

- Bin
Bin Type
 - Separate wheeled bin
 - Other bin (please specify)

- Bag
Bag Type
 - Non-biodegradable plastic
 - Biodegradable plastic
 - Paper
 - Re-usable bag
 - Other bag (please specify)

VIII. IF YOU HAVE TICKED MORE THAN ONE BOX IN QUESTION VII THEN PLEASE STATE WHICH OF THE FOLLOWING STATEMENT APPLIES TO YOU

- Residents can choose between the container types
- Residents in different collection areas are given different container types
- None of the above (please specify)

IX. IS THE HOUSEHOLDER CHARGED FOR THE ORGANIC KERBSIDE COLLECTION SERVICE?

- Yes
- No

X. PARTICIPATION CRITERIA

- Voluntary 'opt-in' basis
- Voluntary 'opt-out' basis
- Mandatory
- Other (please specify)

XI. IF COMPOSTED, WHAT WAS THE FINAL DESINATION OF THE MATERIAL COLLECTED?

- Landfill cover
- Landfill restoration
- Agriculture
- Landscaping/Horticulture/Grounds maintenance
- Land restoration
- Fuel
- Other (please specify)
- Don't know

Appendix III

Producer Questionnaire

The Composting Association is the United Kingdom's membership organisation, promoting the sustainable management of biodegradable resources. It actively promotes the use of biological treatment techniques and encourages good management practices throughout the industry. By advocating a suitable regulatory and economic framework, the Association works to ensure the long-term sustainability of the biological treatment industry.

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All replies will be treated confidentially.

Thank you for your time



Notes for respondents

Please answer all sections.

If you have any queries than please contact, Peter Davies (Technical Officer), on telephone 0870 160 3278, fax 0870 160 3280 or email peter@compost.org.uk

Section A: Contact Details

A1 - Organisation name and address

NAME MR/MRS/MISS/MS/DR (delete as appropriate)

JOB TITLE

ORGANISATION NAME AND ADDRESS

.....

..... POSTCODE

TELEPHONE FAX

EMAIL ADDRESS

A2 - What is the primary role of your organisation?

- | | |
|---|--|
| <input type="checkbox"/> Commercial compost producer | <input type="checkbox"/> Equipment / plant supplier / hire company |
| <input type="checkbox"/> Waste management company / landfill operator | <input type="checkbox"/> Water company |
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Horticultural |
| <input type="checkbox"/> Community group / Not for Profit | <input type="checkbox"/> Other (please specify) |

IF YOU ARE NOT A COMPOST PRODUCER, PLEASE OUTLINE YOUR INVOLVEMENT OR INTEREST IN COMPOSTING (USE **SECTION F** IF NECESSARY) AND RETURN THE QUESTIONNAIRE

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Section B: Composting Site Operations

HOW MANY COMPOSTING SITES DO YOU OPERATE?

If you operate more than one composting site, please photocopy and complete Sections B, C, D and E (pages 3-8) for each site. If you operate a large number of sites please contact me to discuss filling in the questionnaire.

B1 - Composting operator and site name and address

NAME OF ORGANISATION OPERATING COMPOSTING SITE

COMPOSTING SITE NAME AND ADDRESS

.....

.....

PLEASE SPECIFY POSTCODE OF COMPOSTING SITE

HOW LONG HAS COMPOSTING BEEN CARRIED OUT AT THIS SITE? Years Months

B2 - Feedstock source and compost use

I. IS YOUR COMPOSTING FEEDSTOCK:

- Produced on-site
- Brought in from external source
- Both

II. IS YOUR COMPOST PRODUCT:

- Used on-site
- Distributed off site
- Both

B3 - Site location

- Farm
- Materials Recycling Facility
- Civic Amenity site
- Dedicated composting site
- Landfill
- Other (please specify)

B4 - Process

I. PROCESSING SYSTEM

- Mechanically turned windrow
- Static pile with pumped aeration
- Static pile with passive aeration
- In-vessel composting
- Anaerobic digestion
- Other (please specify, e.g. Vermicomposting)

II. CONTAINMENT OF PROCESS

- Open-air
- Covered (open sides)
- Gortex covering
- Fully contained (closed all sides)
- Other (please specify)

II. IF THERE WAS MORE THAN ONE PROCESSING SYSTEM AT YOUR SITE, THEN PLEASE EXPLAIN BRIEFLY

(E.G CATERING WASTES PROCESSED IN-VESSEL SEPARATELY FROM GREEN WASTES IN WINDROWS OR IN-VESSEL FOLLOWED BY WINDROWS)

.....

.....

.....

B5 - Quantity and type of organic material

I. THROUGHPUT - TOTAL QUANTITY OF SOURCE SEGREGATED WASTES COMPOSTED OR DIGESTED IN 2003/04 (EXCLUDING MBT AND MIXED WASTES COMPOSTING)

..... tonnes

II. Please tick all those applicable, and specify the quantity composted in 2003/04

a). MUNICIPAL HOUSEHOLD WASTE (i.e. household waste collected by Local Authority or on their behalf)

- Garden waste from civic amenity / bring sites tonnes
- Garden waste only from kerbside collection scheme tonnes
- Garden & kitchen waste from kerbside collection scheme tonnes
- Kitchen waste only from kerbside collection scheme tonnes
- Other municipal household waste (please specify below) tonnes

b) MUNICIPAL NON-HOUSEHOLD WASTE (i.e. non-household waste collected by Local Authority or on their behalf)

- Local authority parks and garden waste tonnes
- Food processing by-products tonnes
- Food wastes from retailers (e.g. supermarkets / catering outlets) tonnes
- Other municipal non-household waste (please specify below) tonnes

c) NON-MUNICIPAL WASTE

- Landscape / grounds maintenance tonnes
- Forestry / timber/bark tonnes
- Food processing by-products tonnes
- Food wastes from retailers (e.g. supermarkets / catering outlets) tonnes
- Paper and cardboard tonnes
- Other types of non-municipal waste e.g. sewage sludges, manures, straw, (please specify below) tonnes

B6 - Mixed Municipal Solid Waste (MSW) Treatment

I. DID YOU COMPOST OR ANAEROBICALLY DIGEST MIXED (UNSORTED) MSW IN 2003/04?

Yes (please go to **question II**)

No (please go to **section C**)

II. WHEN DID YOU START TREATING MSW?

Month Year

III. WAS THE ACTIVE PHASE?

Aerobic Anaerobic

IV. PLEASE STATE THE TOTAL AMOUNT OF MSW RECEIVED

..... tonnes

V. PLEASE ESTIMATE THE ORGANIC FRACTION AFTER SEPARATION

..... tonnes

VI. WAS THE ORGANIC FRACTION?

Joint fluxed with MSW

Split before stabilisation

VII. PLEASE STATE THE END USE OF THE OUTPUT

Used as landfill daily cover

Soil improver in agriculture

Disposed of to landfill

Used in land restoration

Fuel

Other (please specify)

.....

Section C: Site Planning and Licensing

C1 - Planning and licensing status

I. PLANNING STATUS

- Granted
- Awaiting decision
- Not required (please go to **Section D**)
- Other planning status (please specify)
.....

II. LICENSING OR PERMITTING STATUS

- Granted
- Awaiting decision
- Exempt (please go to **Question C3**)
- Other licensing status (please specify)
.....

C2 - Site licence monitoring requirements

I. WHICH OF THE FOLLOWING DOES YOUR SITE LICENCE REQUIRE YOU TO MONITOR?

(please tick all those applicable)

- | | |
|---|--|
| <input type="checkbox"/> Odours | <input type="checkbox"/> Dust |
| <input type="checkbox"/> Leachate | <input type="checkbox"/> Bioaerosols |
| <input type="checkbox"/> Composition of waste | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Vermin | <input type="checkbox"/> None of these |
| <input type="checkbox"/> Other (please specify) | |

C3 - Obtaining planning permission and waste management licence

I. HAVE YOU EVER BEEN REFUSED **PLANNING PERMISSION**?

- Yes No

IF **YES**, HOW MANY TIMES?
.....

WHAT REASON(S) WERE GIVEN?

II. HAVE YOU EVER BEEN REFUSED A SITE LICENCE OR PERMIT?

- Yes No

IF **YES**, HOW MANY TIMES?
.....

WHAT REASON(S) WERE GIVEN?

Section D: Compost Product

DI - Compost product and stabilised biowaste

I. WHICH, AND HOW MUCH, OF THE FOLLOWING DID YOU PRODUCE IN 2003/04?
(please tick all applicable and give the quantity produced)

DELETE AS APPROPRIATE

- | | |
|---|--|
| <input type="checkbox"/> Mulch
(surface application of large particles used to suppress weeds, retain moisture, prevent soil erosion and decorative purposes) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Soil conditioner
(incorporated [dug or ploughed] into soil to improve, structure, nutrient and biological properties) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Growing media constituent
(material other than soils, used alone or in specific mixtures to grow plants) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Turf (top) dressing
(fine composts to improve establishment and growth of turf) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Ingredient in manufactured top/sub soil
(mixed with soils or other materials (e.g. sand or construction & demolition waste fines) to produce topsoil for landscape applications) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Other type of product
(please specify, e.g. landfill cover, biofuel, organic fertiliser, liquid foliar feed) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |
| <input type="checkbox"/> Stabilised biowaste
(stabilised material from mixed [unsorted] MSW composting/mechanical and biological treatment) | Total quantity tonnes/m ³ /litres
Percentage sold (%)
Percentage distributed no charge (%)
Percentage used on site (%) |



I. WHICH OF THE FOLLOWING STATEMENTS ARE TRUE OF ANY OF THE COMPOST PRODUCED ON YOUR SITE?

- Complies with an independently accredited standard (Go to question II)
- In the process of obtaining certification for an independently accredited standard (Go to question II)
- Does not comply with a standard (Go to Section E)

II. PLEASE INDICATE WHICH STANDARD IS APPLICABLE AND WHETHER THE COMPOST WAS INDEPENDENTLY CERTIFIED,AWAITING CERTIFICATION OR ELIGIBLE BY ANOTHER PROCESSES

	AWAITING INDEPENDENTLY CERTIFIED	INDEPENDENT CERTIFICATION	OTHER
PAS100 <i>(Publicly Available Specification for Composted Products)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EU Eco-label <i>(EU Eco-label for Soil Improvers and Growing Media)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HDRA <i>(Henry Doubleday Research Association Organic Standards for Landscape and Amenity Horticulture)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Soil Association <i>(Soil Association standards for Organic Food and Farming)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other <i>(please specify)</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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.....			

**III. WHAT PERCENTAGE OF THE PRODUCT COMPLIES WITH AN INDEPENDENTLY CERTIFIED STANDARD OR IS AWAITING CERTIFICATION?
(STATE THE PERCENTAGE OF THE PRODUCT TOTAL GIVEN IN D1) (%)**

Section E: Markets, outlets and end-uses

I. PLEASE DETAIL THE TOTAL QUANTITY THAT WAS MANUFACTURED FOR EACH OUTLET IN 2003/04.
ALSO STATE THE PRINCIPAL PRODUCT TYPE, IF POSSIBLE

Market Sector	Total quantity manufactured tonnes / m ³ / litres <i>(indicate as appropriate)</i>	Principal product (ESTIMATE %) e.g. mulch (100%)
<input type="checkbox"/> Horticulture <i>(professional growers using intensive systems, e.g. for flowers, nursery stock, fruit & veg)</i> (%)
<input type="checkbox"/> Amateur gardening <i>(e.g. through retail outlets/civic amenity sites)</i> (%)
<input type="checkbox"/> Agriculture <i>(e.g. arable farmers, livestock farmers)</i> (%)
<input type="checkbox"/> Landscaping (%)
<input type="checkbox"/> Grounds maintenance <i>(Local Authorities, e.g. upkeep of 'green spaces', highways)</i> (%)
<input type="checkbox"/> Sports pitches (%)
<input type="checkbox"/> Land restoration <i>(improving land quality e.g. brown field sites, mining areas)</i> (%)
<input type="checkbox"/> Landfill restoration (%)
<input type="checkbox"/> Landfill - daily cover (%)
<input type="checkbox"/> Other e.g. energy from waste, forestry, bioremediation <i>(please specify)</i> (%)

Section F: Other Comments

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References

- Aylesford Newsprint Limited (2004). *Recycling Atlas for England and Wales 2002/03*. Published by Aylesford Newsprint Ltd., report prepared by David Davies Associates. Available at: <http://www.aylesford-newsprint.co.uk/pdf/recyclingAtlas-EngWales.pdf>
- British Standards Institution (BSI, 2002). *Publicly Available Specification for Composted Materials (PAS 100)*.
- European Commission (2003). *Towards a Thematic Strategy on the Prevention and Recycling of Waste (Com 2003, 301)*. Available from: http://europa.eu.int/eur-lex/en/com/cnc/2003/com2003_0301en01.pdf
- European Commission (2002). *Towards a Thematic Strategy on Soil Protection (COM 2002, 179)*. Available from: http://europa.eu.int/eur-lex/en/com/pdf/2002/com2002_0179en01.pdf
- Davis G (2004). *A comparative study of wheeled bins versus degradable polymer sacks for the kerbside collection of organic wastes*. CIWM Scientific and Technical Review, May, pp 18-30.
- Department of Environment Food and Rural Affairs (DEFRA, 2004). *Municipal Waste Management Statistics 2002/2003*. Available at: <http://www.defra.gov.uk/environment/statistics/wastats/mwb0203/index.htm>
- Department of Environment Food and Rural Affairs (DEFRA, 2004). *The First Soil Action Plan for England 2004-2006*. Available at: <http://www.defra.gov.uk/environment/land/soil/pdf/soilactionplan.pdf>
- Environment Agency (2004). *Assessing the Diversion of Biodegradable Municipal Waste from Landfill by Mechanical Biological Treatment and Other Options: A Consultation Paper Related to Monitoring the Utilisation of Landfill Allowances*. Available at: <http://www.environment-agency.gov.uk/yourenv/consultations>
- Environment Agency (2004) *The State of Soils in England and Wales*. Available at: http://www.environment-agency.gov.uk/commondata/acrobat/stateofsoils_775492.pdf
- Office of the Deputy Prime Minister (2004). *Consultation Paper on Planning Policy Statement 10*. Available at: http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/pdf/odpm_plan_pdf_033314.pdf
- Office of the Deputy Prime Minister (ODPM, 2003). *Monitoring of Peat and Alternative Products for Growing Media and Soil Improvers in the UK 2001*. (Report by Enviros Consulting). Available at: http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_609226.hcsp
- Parfitt J (2002). *Analysis of waste composition and factors driving waste increases*. Report for Strategy Unit, ODPM.
- Scottish Environmental Protection Agency (SEPA, 2004). *NWS: National waste strategy: Local authority waste arisings survey 2002/03*. Available at: <http://www.sepa.org.uk/nws/data/index.htm>
- Slater R (2002). *Meeting the targets: A Profile and Evaluation of the UK Composting Industry*. The Open University (PhD Thesis).
- Slater R and Frederickson J (2001). *Composting municipal waste in the UK: some lessons from Europe*. *Resources, Conservation and Recycling*. Vol. 32, pp. 359-374.
- Strategy Unit (2002) *Waste Not Want Not: A Strategy for Tackling the Waste Problem in England*. Available at: <http://www.number-10.gov.uk/su/waste/report/downloads/wastenot.pdf>
- The Composting Association (2001). *State of Composting in the UK 1999*. (Report by Open University). Available at: http://www.compost.org.uk/dsp_survey.cfm?link=survey
- The Composting Association (2003). *State of Composting in the UK 2001/02*. (Survey by The Composting Association). Available at: http://www.compost.org.uk/dsp_survey.cfm?link=survey
- Waste Resources and Action Programme (WRAP, 2003). *Compost and growing media manufacturing in the UK, opportunities for the use of composted materials*. (Report by Enviros Consulting). Available at: http://www.wrap.org.uk/materials/organics/news_information/reports.html
- Welsh Assembly Government (WAG, 2004). *Municipal Waste Management Survey 2002/03: Results for the Survey for Wales*. Available at: <http://www.wales.gov.uk>





The Composting Association
Avon House
Tithe Barn Road
Wellingborough
Northamptonshire

Tel: 0870 160 3270
Fax: 0870 160 3280
www.compost.org.uk

