# Monitoring of peat and alternative products for growing media and soil improvers in the UK 2007

**Second biennial report by ADAS UK Ltd and Enviros Consulting Ltd**



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- Judith Stuart Defra
- Helen Pontier Defra

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# Abbreviations

| | |
|---|---|
| BAP | Biodiversity Action Plan |
| BSI | British Standards Institution |
| CA | Composting Association |
| Defra | Department for Environment, Food and Rural Affairs |
| EA | Environment Agency |
| HGMF | Horticultural Growing Medium Forum |
| HTA | Horticultural Trades Association |
| GMA | Growing Media Association |
| LA | Local authority |
| MGA | Mushroom Growers Association |
| MIANI | Mushroom Industries Association of Northern Ireland |
| ODPM | Office of the Deputy Prime Minister (now Department of Communities and Local Government (DCLG)) |
| PAS | Publicly Available Specification |
| PWG | Peat Working Group |
| SEPA | Scottish Environment Protection Agency |
| SMC | Spent Mushroom Compost |
| WRA | Wood Recyclers Association |
| WRAP | Waste and Resources Action Programme |

# Executive Summary

## Introduction

The UK government is committed to reducing peat use under the Biodiversity Action Programme and the 2005 target of 40% of total market requirements for soil improvers and growing media to be supplied by non-peat materials was exceeded in that year. The target for 2010 was set at 90%.

To assist Government and the horticultural industry in developing strategies to achieve these targets, data on the use of peat and peat alternatives has been gathered. Surveys commenced in 1993 and continued in the period 1996 to 1999, monitoring the use of materials in amateur gardening, local authorities and landscaping. In 1999, professional growing media were included. The study was repeated in 2001, 2005 and now 2007, including all four markets.

## Project Scope and methodology

The monitoring aims to measure the extent to which the use of peat and alternatives changes, and identify the sectors that use most peat and therefore indicate where effort to change behaviour should be targeted.

As in previous years, the 2007 survey set out to obtain data from the producers of soil improver and growing media products including those that manufacture growing media and retail soil improver products made from peat and various alternative materials and green compost manufacturers. Soil improvers are included in this study for continuity with previous studies and because peat has been used as a soil improver in the past and the BAP targets are based on growing media plus soil improvers. Producers of spent mushroom compost (surveyed in 1998 and 2005) were not surveyed in 2007 and therefore 2005 data are used in this report. 35 growing media manufacturers and 197 compost manufacturers were contacted with response rates of 94% and 75% (of the relevant companies), respectively. It is estimated that 95% of the materials from each of these sectors were accounted for, respectively, providing robust data. The co-operation of manufacturers is gratefully acknowledged as without their significant input in supplying data for the project it would not be possible to have such confidence in the aggregated data.

## Supply of peat and alternatives in 2007

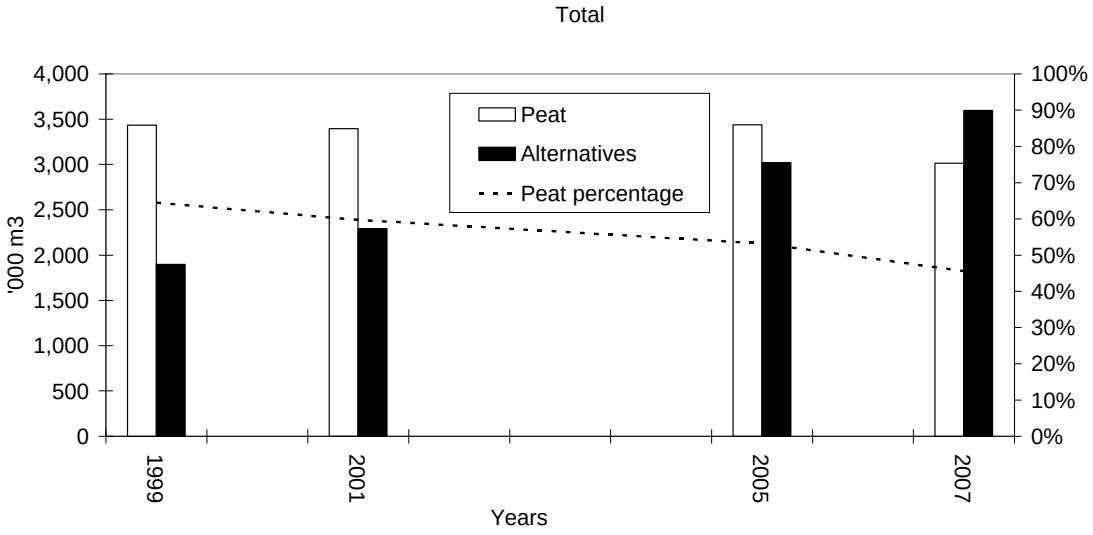
In 2007, the total volume of peat and alternatives used in growing products (soil improvers and growing media) was 6.61 million $m^3$, up from 6.46 million $m^3$ in 2005. The overall proportion of peat in the products fell from 53% to 46%, and the proportion of alternatives rose to 54%, extending above the BAP target of 40% for 2005. The greatest consumption of peat was by amateur gardeners (69% of the total peat used by all sectors).

The total market was split between soil improvers at 39% and growing media at 61%. Of the total peat used, 98% was in growing media and 2% was used in soil improvers. Amateur gardeners utilised the greatest amount of all of the materials (60%) followed by landscape contractors (20%) and professional growers (17%).

## Trends in the supply of peat and alternatives 1999 to 2007

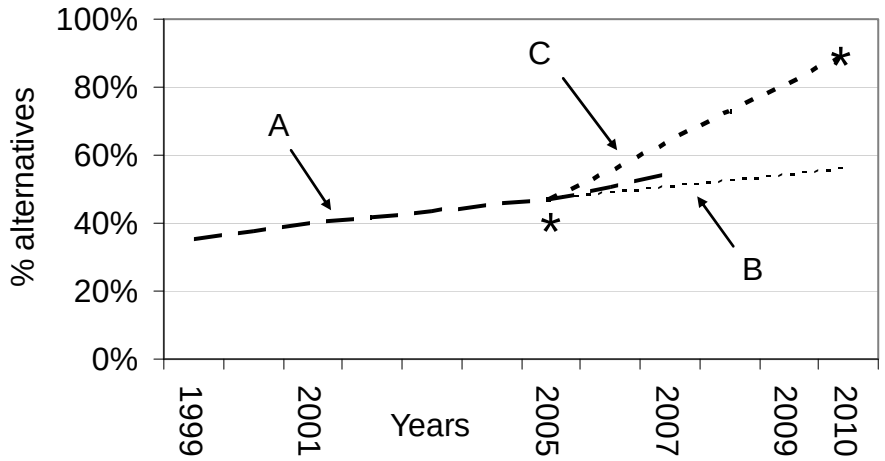
Figure 1 shows that the amounts of alternative materials used have risen. The volume of peat used declined in 2007 from 2005.

**Figure 1 Combined use of peat and alternatives in all four sectors 1999-2007 ('000 $m^3$)**




The volume of peat used was 3.01 million $m^3$ in 2007 and the proportion of peat used in all sectors has fallen since 1999 as the percentage of alternatives has risen from 36% in 1999 to 47% in 2005 (exceeding the 2005 BAP target of 40% non-peat) and to 54% in 2007, as shown in Figure 2.

**Figure 2 The proportion of alternatives and the BAP targets to 2010**




* BAP targets (40% in 2005, 90% in 2010)

A. Trend in proportion of alternatives to 2007.

B. Indication of trend in the future (set in 2005), based on extrapolation of 1999 to 2005 data, assuming the constant rate of change in increasing the proportion of alternatives shown in A up to 2005.

C. Change required from 2005 to meet the BAP target in 2010.

The lines in Figure 2 beyond 2005 (B and C) are for illustrative purposes only apart from the actual data for 2007 (A). It shows the trend in adoption of alternatives as reflected by the observed proportion of alternatives each year for the period up to 2007. It also illustrates two future trends. One of these (B) indicates an extrapolation to 2010 that predicts a peat replacement approaching 60 %, based on a constant of the observed rate of change up to 2005. This clearly fails to meet the target of 90% by 2010. The second (C) indicates a steeper line, or greater rate of change beyond 2005 that was required to meet the BAP target in 2010.

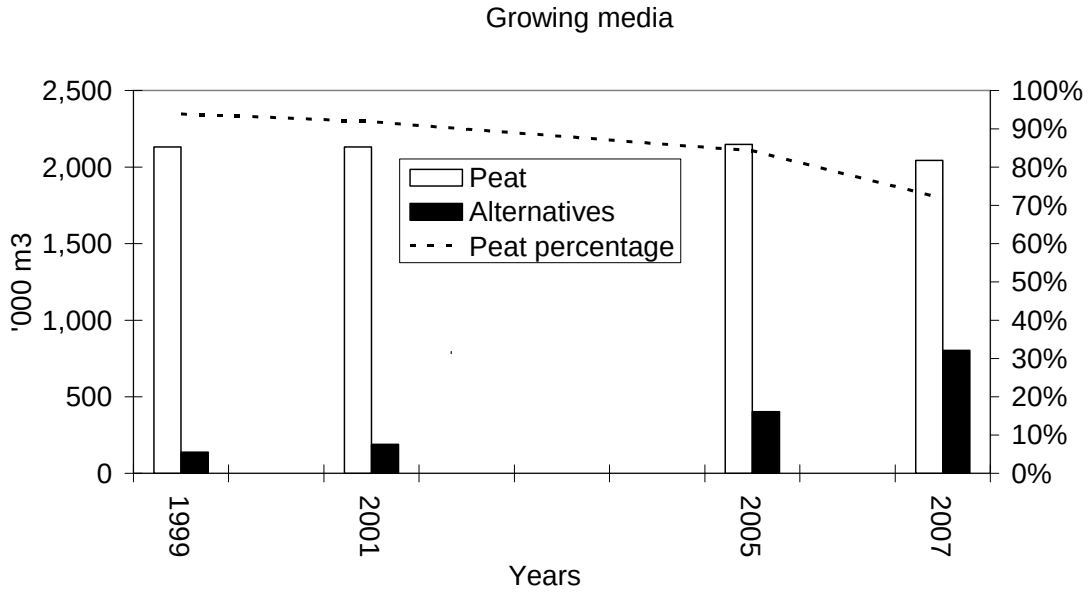
The 2007 data indicate that the rate of peat substitution increased between 2005 and 2007 (3.8% per year) compared with 1999 to 2005 (1.9% per year) but that the rate of change needs to be increased further (to 11.9% per year) if the 2010 target is to be met.

Changes in the proportion of peat in growing media among different sectors are now starting to come through in the industry. Professional growers use only growing media, and the volume of peat used by this sector had been fairly consistent at around 1.1 million $m^3$ but fell in 2007 to 0.92 million $m^3$. The proportion of peat in professional growing media is similar to that in 2005 at 81%.

Greater changes in the amateur gardening market are occurring with 2.08 million $m^3$ peat being used in 2007 (down 0.21 million $m^3$) and increasing volumes of alternatives at 1.86 million $m^3$ (up 0.35 million $m^3$). The peat reduction in this sector was split equally between growing media and soil improvers but the growth in alternatives was in the growing media usage. This means that the proportion of peat in amateur gardening growing media products has reduced from 94% in 1999 to 72% in 2007 (Figure 3). This trend is encouraging. Peat use in the amateur soil improver products has all but ceased but it is known that some 'growing media' products purchased, such as grow-bags are used by gardeners for soil improvement because they are relatively cheap.

As the amateur gardening growing media sector consumes the greatest amount of peat (2.04 million $m^3$, 69% of the total peat used across all sectors), concentrating on this sector may have the quickest impact on meeting the BAP targets. Educating the gardening public will be a key requirement.

**Figure 3 The peat and alternatives amounts, and the proportion of peat, in amateur growing media 1999-2007**




The sources of peat include other countries, and while 43% of our demand has been met from within the UK, 54% has been met by the Republic of Ireland and 3% from Northern Europe.

# 1. Introduction

## 1.1 Background

The purpose of this project is to obtain accurate information on the use of peat and bulky non-peat materials in the horticultural markets in the UK between 2005 and 2010. These data are needed in order to monitor trends and to assist government in developing strategies to achieve targets on peat use reduction. The UK government is committed to reducing peat use under the Biodiversity Action Plan (BAP). Peat extraction is also a significant contributor globally to the emission of carbon dioxide (a greenhouse gas) and therefore Defra is committed to preserving the stores of carbon in peatlands and peat soils. An initial target for 40% of total market requirements for soil improvers and growing media to be supplied by non-peat materials by 2005 has already been met and the industry is now working to the more challenging 90% replacement of peat by 2010. Soil improvers are now virtually peat-free, therefore growing media, in particular amateur gardeners products, make up the majority of the total peat used. The market for growing media, alone, would need to be at least 85% peat-free in 2010 in order to achieve the 90% target for the total market.

The data from the monitoring exercise give information on the volumes of peat and non-peat materials used by the four main horticultural sectors – amateur gardeners, professional growers, landscapers and local authorities. It is mainly collected from the manufacturers supplying these markets, but supplemented with separate studies of the wider supply of green compost and spent mushroom compost.

The study obtains reliable information on the types of materials used by the four sectors in all growing media and soil improver products (including surface mulches) which have traditionally included peat in the past.

## 1.2 Peat and alternative materials

Peat-based products have proven performance, consistency, good availability, are competitively priced and growers are familiar with their management. Peat is an excellent growing medium and became the dominant material for growing media formulation in the 1970s.

Amateur growing media have, until recently, been based on almost 100% peat. The good storage characteristics of peat-based growing media are particularly important as they are often manufactured many months prior to the peak sales period in spring. Economics have also been an important factor as peat has been relatively cheap, requiring little processing, in contrast to alternative materials. The amateur gardening market is very competitive because most products are sold via large retailers who compete on price. Bagged retail growing media are however mostly 'reduced peat' now, with typically up to 30% dilution with other materials.

Professional growers have very stringent quality requirements because they have to produce large numbers of uniform grade plants to schedules. Many now use 'reduced peat' growing media, particularly those supplying the multiple retailers, most of which are committed to reducing dependence on peat.

By far the most widely used soil improver product in the UK is bark, which is used as a surface mulch in the landscaping and amateur gardening sectors. The creation of 'artificial' topsoils for landscaping use has increased in recent years and data on the amount of green compost (but not the associated soil) used for this purpose has been collected and amalgamated into soil improver data for this project. Definitions of materials included in the project are given in the Glossary (section 7).

## 1.3 Horticultural markets

The market for soil improvers and growing media in the UK encompasses four main user groups, of which the principal market sectors are as follows.

**Amateur gardeners:** Gardening is one of the most popular leisure activities in the UK, embracing all social groupings and age classes. The main products bought by amateur gardeners are 'multi-purpose compost', used for raising plants, filling tubs and baskets and "grow-bags" used for growing tomatoes and other vegetables. Amateur gardeners also buy bagged soil improver products and mulching materials via multiple retailers.

**Professional growers:** Professional growers often obtain materials from the same producers who supply the amateur market, but the market is more specialised with growers using particular formulations according to the crops grown and their growing systems.

**Private sector landscapers:** Landscapers use large quantities of soil improvers for the amelioration of soil following development and construction work. Landscape architects may be involved in specifying the type of materials used in various schemes. Materials are usually purchased in bulk direct from producers or wholesalers. This sector mostly uses soil improver products such as planting composts and mulches, generally purchased in bulk loads.

**Local authority grounds maintenance:** The local authority market used to be more significant when most councils had their own nurseries to raise plants for their own use but this has declined as much of this activity is now contracted out. Most consumption nowadays of relevant materials is for soil improvement.

## 1.4 Producers of soil improvers and growing media

The supply of soil improver and growing media products sold to amateur gardeners is dominated by a few large manufacturers who can service the national distribution requirements of the multiple retailers. Professional growing media supply is also mainly from a relatively small number of manufacturers who can source the right quality of raw materials and invest in the sophisticated mixing equipment used. The number of UK growing media producers is reducing as margins have become smaller and competition from imported products (particularly from The Netherlands) increases. Some producers have considerable capital assets in the form of peat reserves but many have also invested in recent years to increase use of peat alternatives.

Significant volumes of raw materials for professional growing media are imported into the UK, for example peat, pine bark, coir and wood fibre. Imported peat from the Republic of Ireland is particularly significant.

Changes towards peat replacement reflect the commitment and efforts of the growing media industry to support the BAP and source raw materials sustainably by developing and providing reduced peat growing media products to both professional and amateur growers. The Horticultural Trades Association has recently set up a ‘Growing Media Initiative’ to encourage producers and retailers to commit to peat reduction, to reward those making the most progress and to educate the gardening public about the need to use alternatives.

# 2. Project objectives and scope

The aim of the whole project is to monitor the use of peat and alternatives between 2005 and 2010 for growing media and soil improvers, particularly in those sectors where peat use is greatest, including amateur gardening, professional horticulture, private sector landscaping and local authority grounds maintenance. The first monitoring episode in the current project was carried out for 2005 followed by 2007, as reported here. The monitoring aims to measure the extent to which the use of peat and alternatives changes, and identify the sectors that use most peat and therefore indicate where effort to change use should be targeted.

Data have been collected since 1993 (see Appendix 1) and it is essential that the surveys are directly comparable in methodology of data acquisition and presentation, taking into account changes that have occurred in the past with the addition of spent mushroom compost in 1998, professional growing media in 1999 and loam incorporated in growing media (not turf topdressings or root zone mixes) in 2001.

The objectives are to:

- identify the total supply of peat and alternatives, including green compost and spent mushroom compost, in each of the years;
- present the data broken down according to:

  use as growing media or soil improver;

  the sector of use;

  by year of collection and from 1999 onwards for all sectors and

  from 1993 for the three sectors excluding professional growing media;
- Identify the sources of peat and bark.

# 3. Methodology

## 3.1 Data collection

Data for 2007 was collected using the same methodology as for 2005 with only minor changes to the input forms. Participating producers were asked to supply data for 2007 on the volumes of materials supplied separately to each of the four markets, amateur gardeners, local authorities, landscapers and professional growers with the data further sub-divided as soil improvers and growing media.

Survey forms and letters were agreed with Defra in 2007 prior to being sent out. Changes on the data collection form from 2005 for compost producers aimed to clarify that green compost use in major reclamation projects should not be included.

Producers were asked to identify their sources by region for peat and bark. Peat sources have been grouped into UK, the Republic of Ireland and Northern Europe. Bark sources were split into the UK, Southern Europe (including the small amount from the Republic of Ireland) and Northern Europe. These groupings have been used to maintain the confidentiality of commercial information obtained as it might otherwise have been possible to identify individual importers.

### *3.1.1 Peat and the main alternatives*

Initial meetings were held with the Chairman and the Deputy Chairman of the Growing Media Association and also the Horticultural Trades Association to agree an initial list of those to be contacted.

All producers were contacted by letter and telephone at the end of 2007 seeking their agreement to participate. In early January the new producers, plus those who had changed personnel since the previous study, were contacted again to explain the objectives of the study and to confirm that the details of what was being sought were fully understood. Arrangements were made for face to face visits with some, mostly those supplying a range of materials to all four end markets, to ensure complete data were accurately supplied. Most companies, particularly those with more straightforward data were able to supply the information remotely by completion of the data collection table.

Information was sought on the supply of peat and the main alternatives to peat including bark, green compost, wood-based materials, cocoa shell, coir, loam and a wide range of minor physical amendments. Additionally, the country of origin of both peat and bark was identified.

33 out of 35 producers, listed in Appendix 2, supplied data on their materials sent to each of the markets which they supplied during 2007. Confidence in the reliability of the data is very high since no significant producer is omitted from the list and the view of the industry is that in excess of 95% of the market has been accounted for.

### *3.1.2 Green compost*

A comprehensive list of green compost producers was compiled based on data from the Composting Association, the Environment Agency and sources in Scotland (through the Scottish Environment Protection Agency (SEPA)), Wales and Northern Ireland. A letter was sent with the survey form to each of the producers in November/December 2007. Those who had not responded by the end of January were contacted by telephone. A number of compost producers were visited to explain the survey in more detail and assist with the collection of data.

The survey was sent to 197 companies. 40 were found to not being operative any more or had amalgamated with another company. Farm-only operations amounted to 63. Of the remaining 94, 70 responses were received giving a response rate of 75% of the relevant companies.

Of these 94 producers, 7 were of unknown capacity, 13 were classed as small, producing less than 5,000 $m^3$ of compost in 2007, 46 were medium sized, producing 5,000 - 20,000 $m^3$ in 2007 and 28 were classed as large, producing over 20,000 $m^3$ of compost in 2007. The response rates for these four groups were 0%, 62%, 82%, and 86%, respectively. Of the large composters, only 4 did not return any data this year and so 2005 data were used. For all of the medium sized companies who did not respond, materials supplied were reliably estimated from known input tonnages or 2005 data. It is estimated that over 93% of the compost used in the markets has been accounted for.

### *3.1.3 Spent mushroom compost (SMC)*

Spent mushroom compost data were previously obtained for 2005. As the amounts of this material are relatively small compared with the other materials surveyed and changes likely to be insignificant, spent mushroom compost data was not requested for 2007. The 2005 data have therefore been used in this report.

### *3.1.4 General comments on data collection*

Steps were taken to avoid double counting of materials, as in previous years, where materials are supplied via intermediaries within the growing media and landscaping industries.

The quantitative information gathered for growing media is based on materials which are mainly supplied as branded products by established suppliers operating at national level. However, there are materials supplied into the soil improver market on a local basis for which no reliable data are available such as compost produced at home, farmyard manure and stable waste.

A full list of all producers who participated is given in Appendix 2.

## 3.2 Data management

The data collected are commercially sensitive and so steps were taken to ensure confidentiality through the use of coded forms and aggregation of data. Data gathered by Enviros and ADAS were independently amalgamated for the compost producers and the peat producers, respectively. Steps to minimise the risk of double counting of materials were taken through close liaison between Enviros and ADAS. Where green compost data was supplied in tonnes, this was converted to cubic metres by using a factor of 0.6 kg/$m^3$ as in previous years. The data were entered into a database and the tables and graphs produced.

Pie charts have been used to show the relative proportions of materials, and graphs have been produced with bars representing volumes in thousands of cubic metres ($m^3$).

## 3.3 Baseline years

The original Peat Working Group (PWG) was established in 1992 to assess the balance between nature conservation and mineral extraction which might affect peatlands. Surveys were started in 1993, and were continued through 1996 to 1999, on peat and the use of alternatives in three sectors: amateur gardeners, local authorities and landscapers. In 1998, spent mushroom compost use was included in the survey but the data excluded from data tables to enable the trends to be compared. In 1999 professional growing media were included in the survey, with loam in growing media added in 2001.

Comparable data can therefore be presented since 1993 for the three main sectors (presented in Appendix 1) and from 1999 onwards for all four sectors by incorporating the 1998 spent mushroom compost data into the survey data for 1999 and 2001.

# 4. Supply of peat and alternative products 1999 - 2007

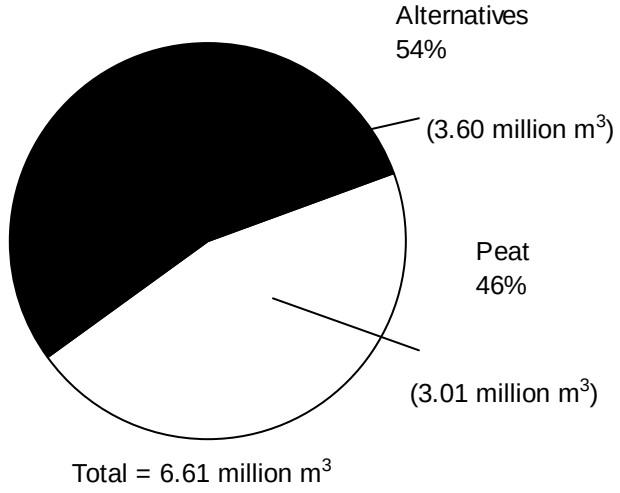
The data for 2007 and trends from 1999 to 2007, including data for the professional grower market and bulk spent mushroom compost (SMC), are provided in this section of the report.

In the 2001, and previous, reports the bulk spent mushroom compost data were excluded from the tables and graphs of trends to maintain continuity with data since 1993. The historic data for the three sectors excluding professional grower market and excluding SMC are shown in Appendix 1.

## 4.1 Total supply of materials to all market sectors in 2007

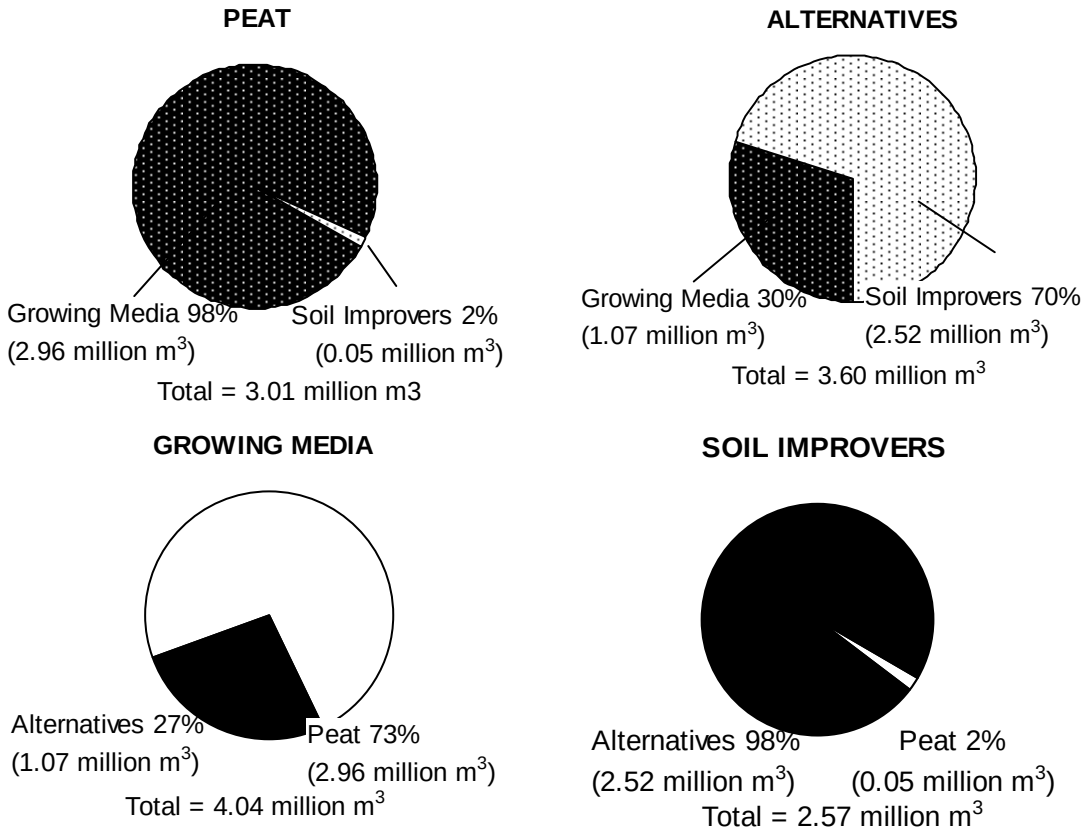
In 2007, the total consumption of peat and alternative materials used in all four sectors was 6.61 million $m^3$ of which 3.01 million $m^3$ was peat (46%) and 3.60 million $m^3$ (54%) was alternatives (Figure 4 and Table 1 ).

**Figure 4 The quantities of peat and alternative materials used in soil improvers and growing media in 2007 for all market sectors**



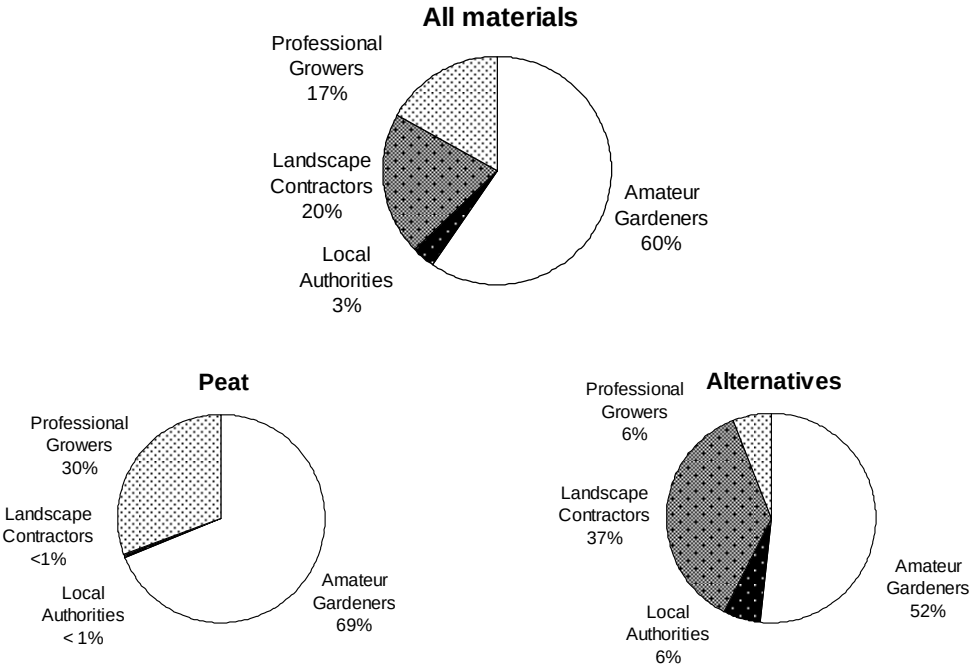
Soil improvers accounted for 39% of the materials used (2.57 million $m^3$) and growing media for 61% (4.04 million $m^3$). This is similar to 2005.

**Figure 5 The amounts of peat and alternatives used in soil improvers and growing media in 2007**



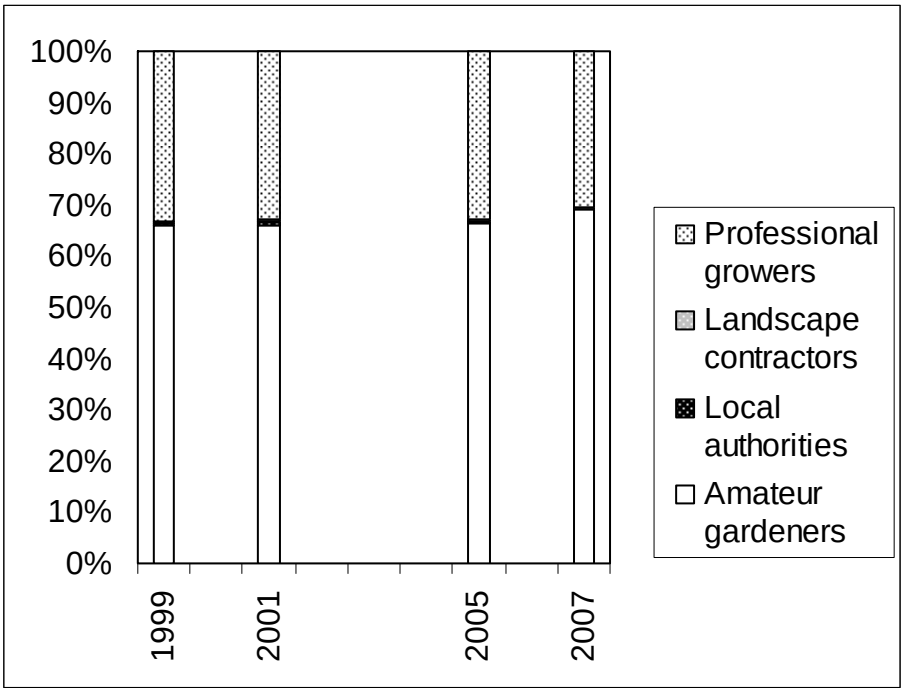

The majority of the volume of growing media was made up of peat, with only 27% of the materials used containing or being made entirely of alternatives. Conversely only 2% of the materials used as soil improvers were peat (Figure 5 ).

**Figure 6 Consumption of materials by the main user groups in 2007**




Amateur gardening used the most peat. Table 1 shows that most of this was in the form of growing media products (amounting to 2.04 million $m^3$ of peat) with the peat used in soil improvers remaining very small.

**Figure 7 Change in consumption of peat 1999 to 2007**




The consumption of peat by amateur gardeners increased from 66% of the total during the period from1999 to 2005 up to 69% of the total in 2007 due to the reduction in use by professional growers (Figure 7 ). The professional market for products declined overall, both in terms of peat and alternatives usages.

**Table 1 Summary of material supplied to all sectors of the UK horticultural market in 2007 ('000 $m^3$)**

| Market sector | Soil improvers | Growing media | Total |
|---|---|---|---|
| *Amateur gardening* | | | |
| Peat | 33.4 | 2,043.5 | 2,077.0 |
| Alternatives | 1,056.1 | 802.4 | 1,858.6 |
| Sub-Total | 1,089.6 | 2,846.0 | 3,935.5 |
| % Peat | 3% | 72% | 53% |
| *Local authority* | | | |
| Peat | 5.7 | 1.6 | 7.3 |
| Alternatives | 204.3 | 5.4 | 209.7 |
| Sub-Total | 210.0 | 7.0 | 217.0 |
| % Peat | 3% | 23% | 3% |
| *Landscaping* | | | |
| Peat | 10.3 | 0.3 | 10.6 |
| Alternatives | 1,262.6 | 55.6 | 1,318.2 |
| Sub-Total | 1,272.9 | 55.9 | 1,328.8 |
| % Peat | 0.81% | 1% | 1% |
| *Professional growers* | | | |
| Peat | 0.0 | 917.5 | 917.5 |
| Alternatives | 0.0 | 209.7 | 209.7 |
| Sub-Total | 0.0 | 1127.1 | 1127.1 |
| % Peat | | 81% | 81% |
| *Total market* | | | |
| Peat | 49.4 | 2,962.9 | 3,012.3 |
| Alternatives | 2,523.1 | 1,073.0 | 3,596.1 |
| Total | 2,572.5 | 4,036.0 | 6,608.4 |
| % Peat | 2% | 73% | 46% |

**Table 2 Consumption of peat and alternatives by each market sector in 2007 (percent of total consumption)**

| Market sector | Peat | Alternatives |
|---|---|---|
| Amateur gardeners | 68.9% | 51.7% |
| Local authorities | 0.2% | 5.8% |
| Landscape contractors | 0.4% | 36.7% |
| Professional growers | 30.5% | 5.8% |

## 4.2 Discussion of trends 1999 – 2007

In 1999, the use of materials in professional horticulture was included for the first time in the peat monitoring reports. In 1998, the bulk spent mushroom compost (SMC) supply was assessed for the first time in a separate survey. The amounts of bulk SMC recorded in the 1998 and 2005 separate surveys are shown in Table 3 . The 1998 data have been added to the data for alternatives for 1999 and 2001 to make the data comparable to 2005 and beyond. ***The 2001 report did not include this bulk SMC data.*** It should be noted that the volumes shown are the **additional** supply from mushroom growers, often through hauliers, which supplement the quantity of SMC used directly by the producers of growing media and retail products. All of the bulk SMC was used as a soil improver.

The SMC supply was not re-assessed for 2007 and 2005 data have been used in this report.

**Table 3 Bulk spent mushroom supply ('000 $m^3$)**

| | **1998** | **2005** |
|---|---|---|
| Amateur gardeners | 77.5 | 37.0 |
| Local authority | 14.0 | 24.0 |
| Landscaping | 190.5 | 164.0 |

The data for all four sectors, including bulk SMC is shown in Tables 4 to 6 and graphically in Figures 8 to 14.

## Table 4 Trend of material use by market sector 1999 - 2007 ('000 m3)

| | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|
| **Amateur gardeners** | | | | |
| Peat | 2,269.9 | 2,241.2 | 2,283.1 | 2,077.0 |
| Alternatives | 695.3 | 1,003.6 | 1,509.2 | 1,858.6 |
| Sub-Total | 2,965.2 | 3,244.8 | 3,792.3 | 3,935.5 |
| % Peat | 77% | 69% | 60% | 53% |
| **Local authority** | | | | |
| Peat | 14.0 | 25.3 | 10.2 | 7.3 |
| Alternatives | 189.5 | 142.1 | 151.5 | 209.7 |
| Sub-Total | 203.5 | 167.4 | 161.6 | 217.0 |
| % Peat | 7% | 15% | 6% | 3% |
| **Landscaping** | | | | |
| Peat | 9.4 | 12.5 | 9.8 | 10.6 |
| Alternatives | 949.6 | 1,043.3 | 1,081.3 | 1,318.2 |
| Sub-Total | 959.0 | 1,055.8 | 1,091.1 | 1,328.8 |
| % Peat | 1% | 1% | 1% | 1% |
| **Professional growers** | | | | |
| Peat | 1,140.0 | 1,116.1 | 1,133.0 | 917.5 |
| Alternatives | 61.8 | 100.7 | 277.8 | 209.7 |
| Sub-Total | 1,201.8 | 1,216.8 | 1,410.7 | 1,127.1 |
| % Peat | 95% | 92% | 80% | 81% |
| **Total market – all four sectors** | | | | |
| Peat | 3,433.3 | 3,395.1 | 3,436.0 | 3,012.3 |
| Alternatives | 1,896.2 | 2,289.7 | 3,019.8 | 3,596.1 |
| Total | 5,329.5 | 5,684.8 | 6,455.8 | 6,608.4 |
| % Peat | 64% | 60% | 53% | 46% |

## Table 5 Trend of material use for soil improvers by market sector 1999 - 2007 ('000 m3)

| | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|
| **Amateur gardeners** | | | | |
| Peat | 138.4 | 111.0 | 134.3 | 33.4 |
| Alternatives | 557.2 | 814.1 | 1,107.1 | 1,056.1 |
| Sub-Total | 695.6 | 925.1 | 1,241.4 | 1,089.6 |
| % Peat | 20% | 13% | 11% | 3% |
| **Local authority** | | | | |
| Peat | 0.2 | 0.1 | 6.5 | 5.7 |
| Alternatives | 185.7 | 125.4 | 145.5 | 204.3 |
| Sub-Total | 185.9 | 125.5 | 151.9 | 210.0 |
| % Peat | 0% | 0% | 4% | 3% |
| **Landscaping** | | | | |
| Peat | 6.4 | 1.0 | 6.3 | 10.3 |
| Alternatives | 944.0 | 1,003.5 | 1,055.9 | 1,262.6 |
| Sub-Total | 950.4 | 1,004.5 | 1,062.2 | 1,272.9 |
| % Peat | 1% | 0% | 1% | 1% |
| **Professional growers** | | | | |
| Peat | 0.0 | 0.0 | 0.0 | 0.0 |
| Alternatives | 0.0 | 0.0 | 0.0 | 0.0 |
| Sub-Total | 0.0 | 0.0 | 0.0 | 0.0 |
| % Peat | | | | |
| **Total market – all four sectors** | | | | |
| Peat | 145.0 | 112.1 | 147.1 | 49.4 |
| Alternatives | 1,686.9 | 1,943.0 | 2,308.4 | 2,523.1 |
| Total | 1,831.9 | 2,055.1 | 2,455.5 | 2,572.5 |
| % Peat | 8% | 6% | 6% | 2% |

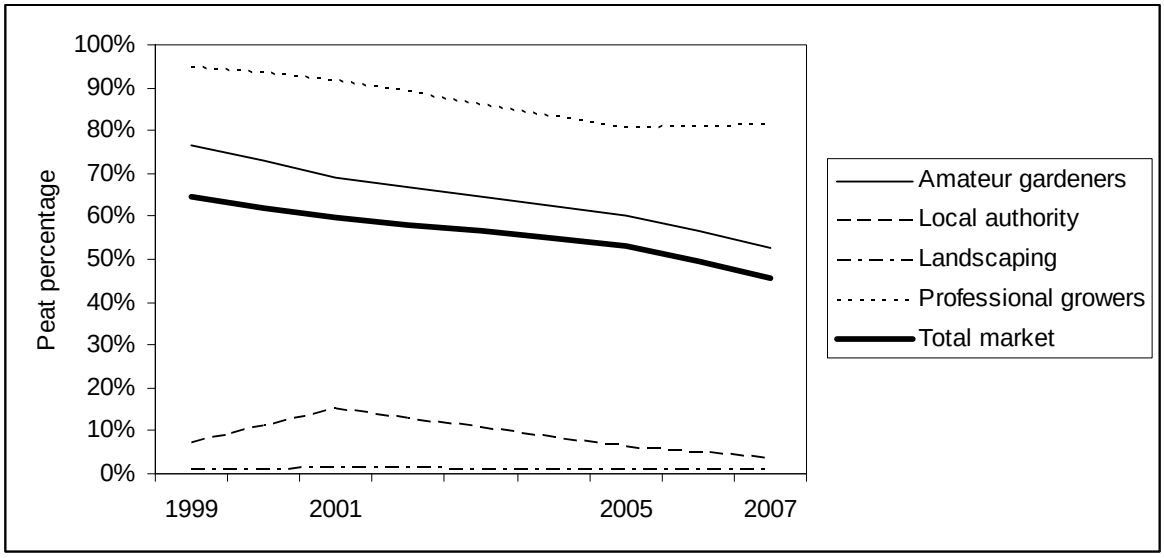
**Table 6 Trend of material use for growing media by market sector 1999 - 2007 ('000 m3)**

| | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|
| **Amateur gardeners** | | | | |
| Peat | 2,131.5 | 2,130.2 | 2,148.8 | 2,043.5 |
| Alternatives | 138.1 | 189.5 | 402.1 | 802.4 |
| Sub-Total | 2,269.6 | 2,319.7 | 2,550.9 | 2,846.0 |
| % Peat | 94% | 92% | 84% | 72% |
| **Local authority** | | | | |
| Peat | 13.8 | 25.2 | 3.7 | 1.6 |
| Alternatives | 3.8 | 16.7 | 6.0 | 5.4 |
| Sub-Total | 17.6 | 41.9 | 9.7 | 7.0 |
| % Peat | 78% | 60% | 38% | 23% |
| **Landscaping** | | | | |
| Peat | 3.0 | 11.5 | 3.5 | 0.3 |
| Alternatives | 5.6 | 39.8 | 25.4 | 55.6 |
| Sub-Total | 8.6 | 51.3 | 28.9 | 55.9 |
| % Peat | 35% | 22% | 12% | 1% |
| **Professional growers** | | | | |
| Peat | 1,140.0 | 1,116.1 | 1,133.0 | 917.5 |
| Alternatives | 61.8 | 100.7 | 277.8 | 209.7 |
| Sub-Total | 1,201.8 | 1,216.8 | 1,410.7 | 1,127.1 |
| % Peat | 95% | 92% | 80% | 81% |
| **Total market – all four sectors** | | | | |
| Peat | 3,288.3 | 3,283.0 | 3,289.0 | 2,962.9 |
| Alternatives | 209.3 | 346.7 | 711.3 | 1,073.0 |
| Total | 3,497.6 | 3,629.7 | 4,000.3 | 4,036.0 |
| % Peat | 94% | 90% | 82% | 73% |

### *4.2.1 Main trends*

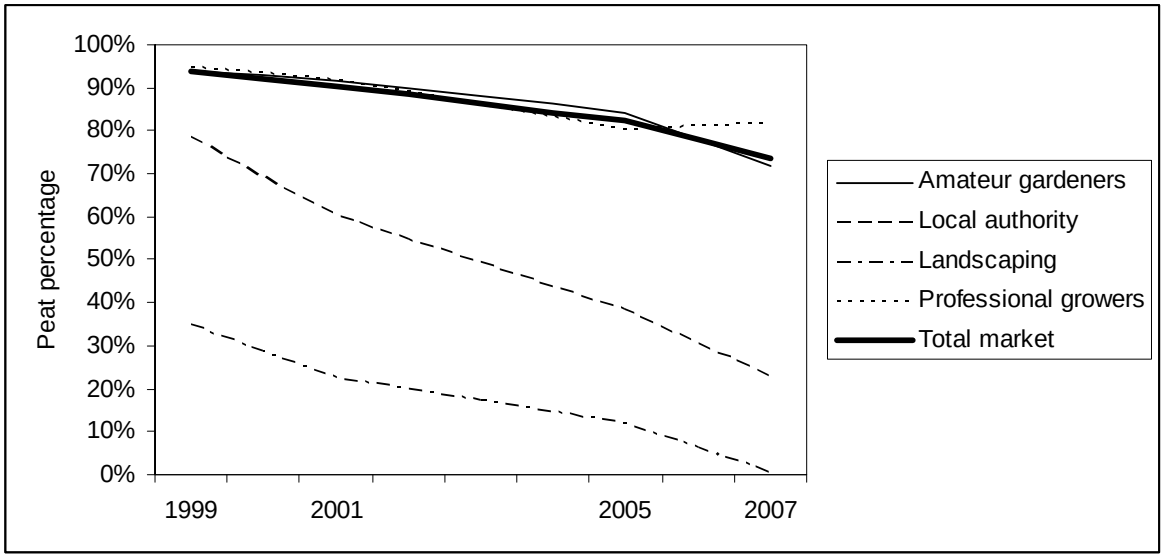
The total volume of all materials supplied to the four main horticultural markets increased marginally from 6.46 million $m^3$ in 2005 to 6.61 million $m^3$ in 2007. The largest increase was in landscaping followed by amateur gardening with a decrease in the use of professional grower materials. Peat accounted for 46% of the total materials use in 2007 (Table 4 ), as compared to 53% in 2005 ***passing the 50:50 ratio for the first time***. The trends in changes in each market and the total market are shown in Figure 8 from 1999 to 2007.

**Figure 8 Trend in total usage of peat in each market and the total market 1999 - 2007**



The average peat usage in growing media has declined from 82% in 2005 to 73% in 2007. The trends for growing media since 1999 are shown in Figure 9 for each of the four markets and in total.

**Figure 9 Trend in usage of peat in growing media in each market and the total market 1999 - 2007**




The total quantity of materials used in soil improvers was 2.57 million $m^3$ (39% of total consumption) and a total of 4.04 million $m^3$ of materials were used in growing media (61% of total consumption – see Table 5 and Table 6 ) in 2007. The soil improver and the growing media markets remained similar in size to 2005 with only slight increases.

The growing media market is the most important in relation to trends in peat consumption because 98% of peat is used in growing media products (see Figure 5 ), mainly for plant growing by amateur gardeners and professional growers (see Figure 6 ). Soil improvers are mostly based on non-peat materials (98% alternatives).

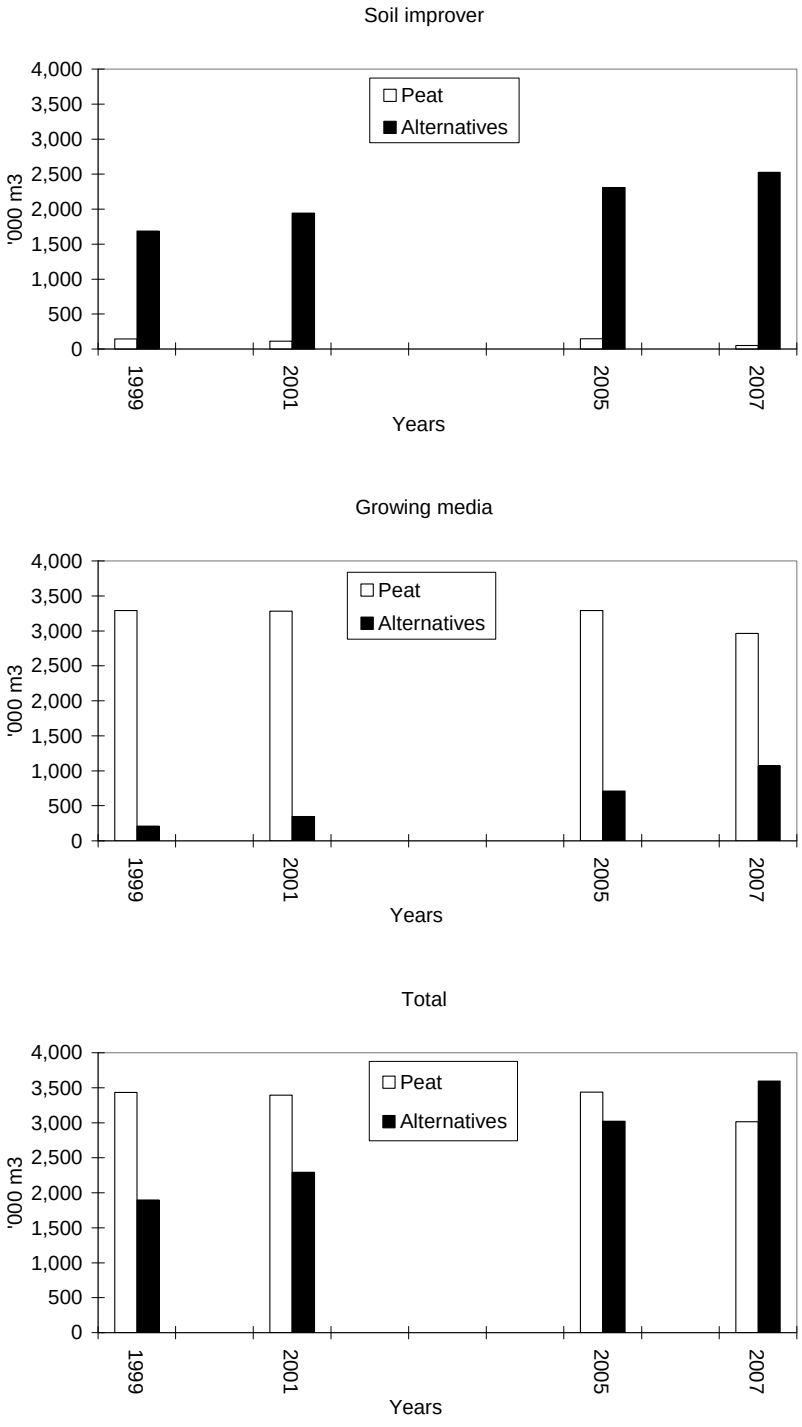
The split in total consumption of peat and alternative materials by the four horticultural sectors continued to show a steady decline, down to 46% in the proportion of peat usage, primarily by reduced amateur gardener usage (down from 60% to 53%) whereas professional grower use remained static at 81%. Amateur gardeners used the largest volume of materials, accounting for 60% of all consumption. Professional growers (17%) and landscapers (20%) are smaller but significant users, however the majority of landscaper materials use is non-peat product in soil improvers and mulches. Local authorities represent a very small proportion of total use (3%), as would be expected with most plant raising and landscaping operations being contracted out.

All of the horticultural sectors have reduced the proportion of peat in total materials use since 1999 (Table 4 ). Amateur gardeners are the most significant sector in terms of volumes of peat and other materials used, therefore changes in this sector, particularly reduction in the percentage of peat in growing media products, will have the greatest influence on overall trends to meet BAP targets.

The overall soil improver market increased slightly in size since 2005 (Table 5 ) and peat usage is now relatively insignificant. Soil improver use declined in the amateur gardening market, possibly due to the wet summer in 2007, however landscaping increased its usage.

The total growing media market in 2007 stayed almost the same as in 2005, close to 4.04 million $m^3$. Amateur gardening use of growing media products (Table 6 ) was greater than in 2005 (products are bought earlier in the season and so less affected by a wet summer).

**Figure 10 Combined use of peat and alternatives by the amateur gardening, local authority, private sector landscaping markets and professional growers 1999-2007 ('000 $m^3$)**



### *4.2.2 Trends in amateur gardening usage*

Most of the peat used by amateur gardeners is in growing media products such as ‘Multi-purpose Compost’ and ‘Growing Bags’.

The introduction of ‘reduced peat’ formulations by many growing media manufacturers has increased the proportion of other materials in these products and this is seen in Figure 11 . The use of alternative materials is still relatively small but has increased from only 6% of the total growing media volume in 1999 to 28% in 2007.

### *4.2.3 Trends in local authority usage*

The local authority usage remained low (Figure 12 ). The few local authorities still producing plants in growing media have reduced peat use to only 23 % of the total growing media used. There is a strong emphasis on reducing peat use in many local authorities, some of which specify that bought-in plants for amenity planting must be peat-free.

### *4.2.4 Trends in landscape contractor usage*

The landscape market uses a significant percentage of all soil improver materials (49%), predominantly as surface mulches (Table 5 ). This sector uses very little peat, even in growing media (Figure 13 and Table 6).

**Figure 11 Use of peat and alternatives by the amateur gardening market 1999-2007 ('000 $m^3$)**

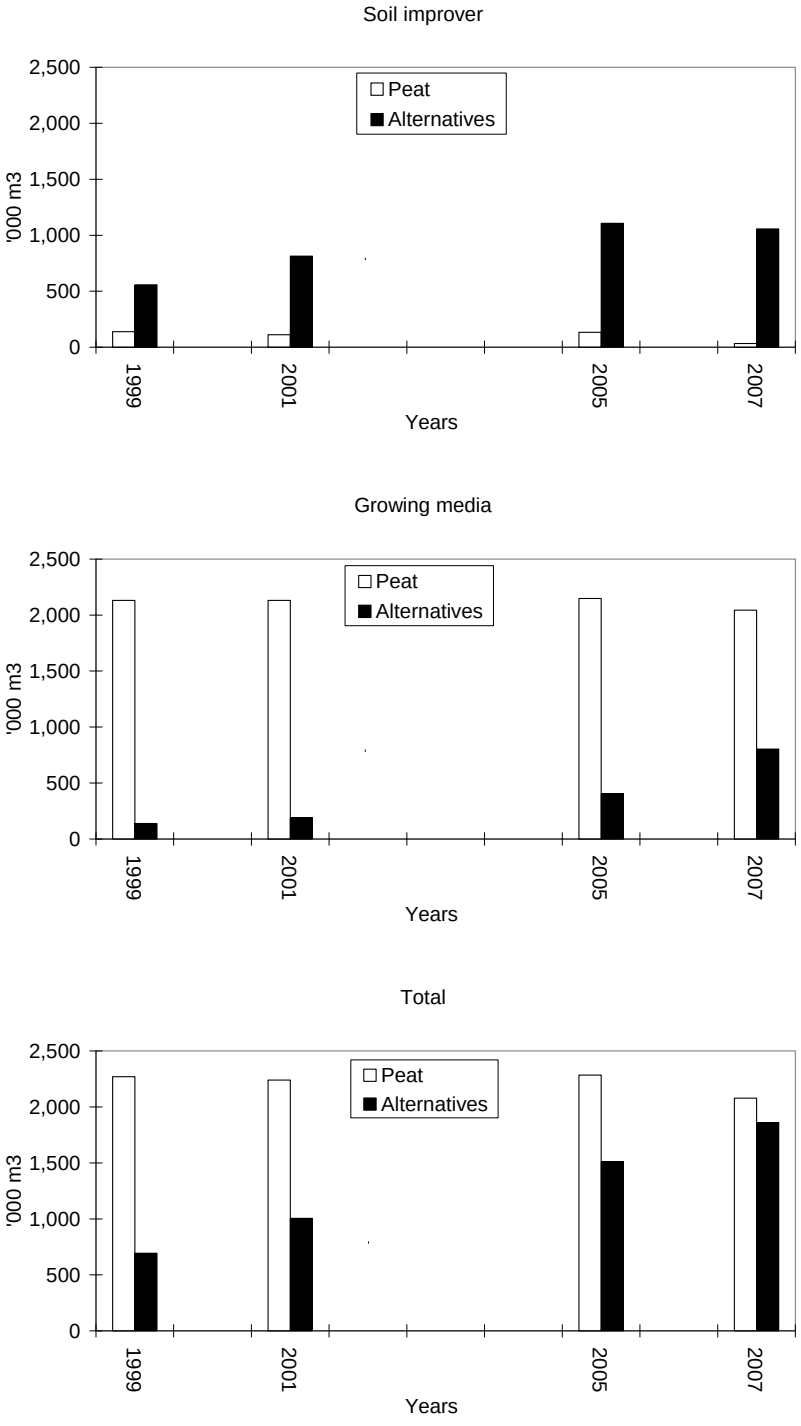


**Figure 12 Use of peat and alternatives by the local authority market 1999-2007 ('000 $m^3$)**

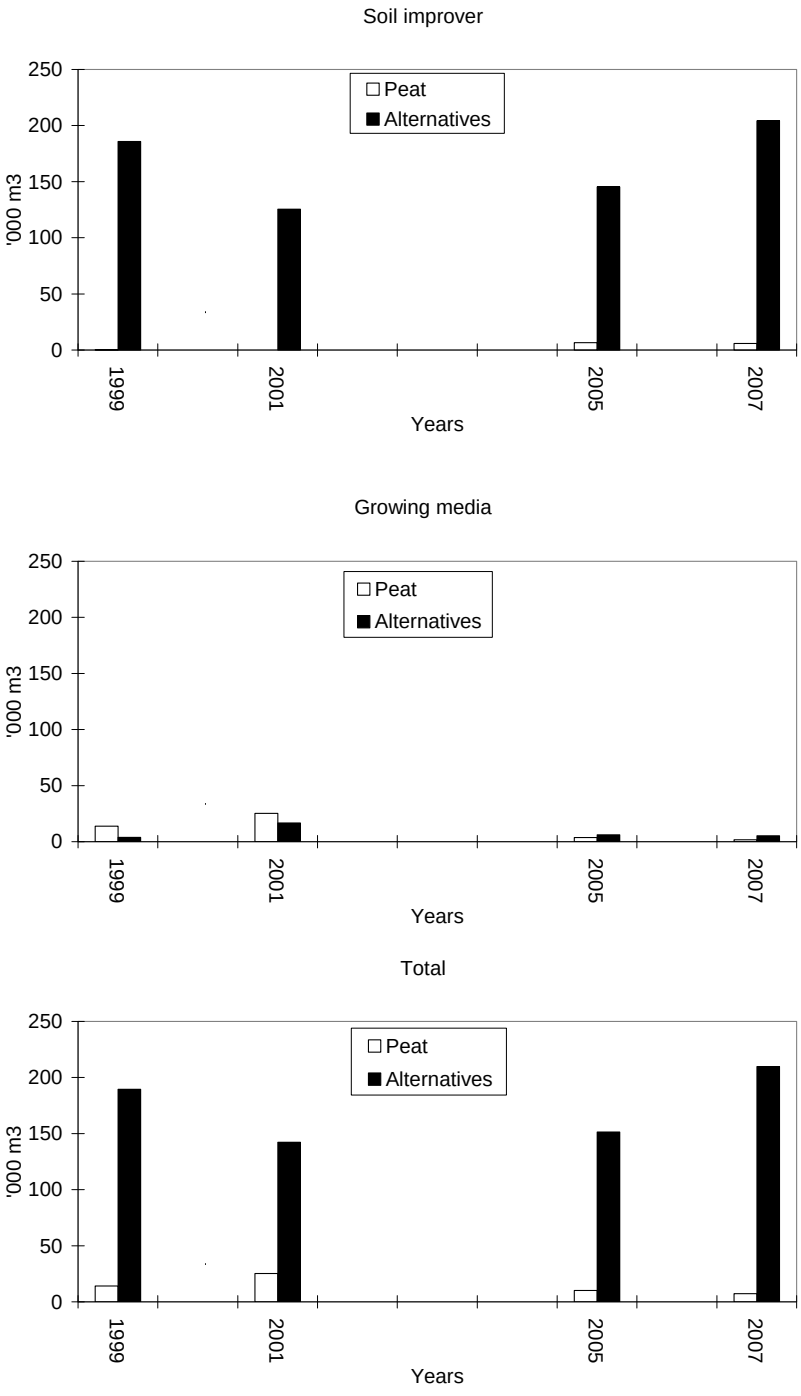
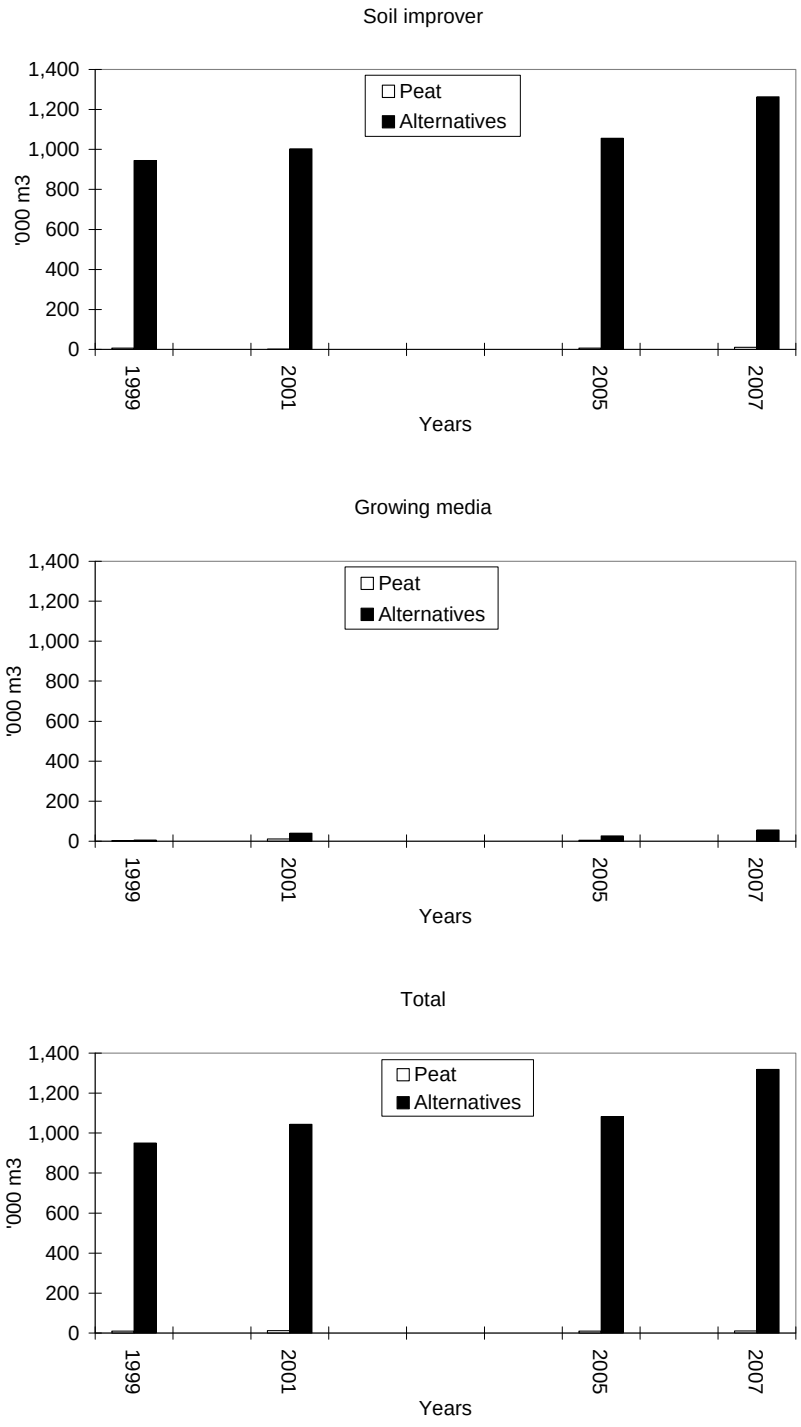


**Figure 13 Use of peat and alternatives by the landscape contractor market 1999-2007 ('000 $m^3$)**

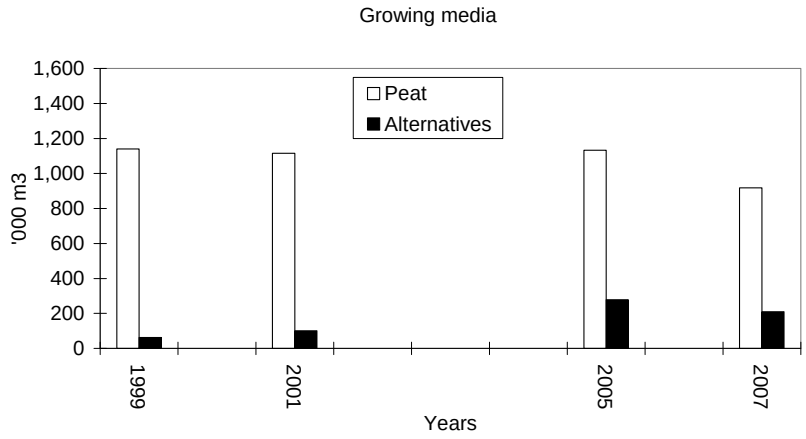


### *4.2.5 Trends in professional grower usage*

Peat has been the main ingredient in professional growing media since the 1970s and accounted for about 95% of material use in 1999. Since then environmental pressure has resulted in many growers adopting reduced peat mixes over the last 5 years or so (particularly growers supplying the multiple retailers). There have been technical difficulties with peat alternatives not being consistent enough in quality for the stringent requirements of this sector but there are also economic reasons why growers have not universally moved to reduced peat or peat-free media. Most peat alternatives have been more expensive than peat and there has been no premium offered for reduced peat or peat-free plants to offset this in a period when grower margins have been reducing anyway and there has been little direct demand from the gardening public for such plants. Many gardeners and landscapers still buy plants based on price and are either unaware or unconcerned about the peat issue.

The UK growers face increasing competition from imported plants and the overall usage of growing media by professional growers was slightly lower in 2007 than 2005 (Figure 14 ), reflecting this and a down-turn in the market due to poor weather in spring 2007, which adversely affected plant sales. The average peat content of professional growing media in 2007 was similar to that in 2005 at 81%. This reflects the fact that growers who supply multiple retailers have moved to the required 20-30% peat dilution but they have not been able to progress beyond this, for both technical and economic reasons. Growers supplying other markets such as the independent garden centres have generally not been pressured into reducing peat use and many still use 100% peat media. A few growers (mostly smaller scale) successfully grow peat-free plants for niche markets such as the National Trust and the quality of non-peat media has improved markedly in the last 5 years.

**Figure 14 Use of peat and alternatives by the professional growers market 1999-2007 ('000 $m^3$)**




## 4.3 Sources of peat

As in previous years, around half the peat used in the UK in 2007 was from the Republic of Ireland. Northern Europe supplied only 3% of the peat, mostly from the Baltic States and mostly used in professional growing media. The volume of peat used that is from the UK has remained similar to 2005 but the proportion has risen slightly to 43 % from 38 %. The wet summers of 2007 and 2008 will have implications for peat supply in 2008/9.

**Figure 15 Sources of peat supplied to all horticultural markets in the UK (2007)**

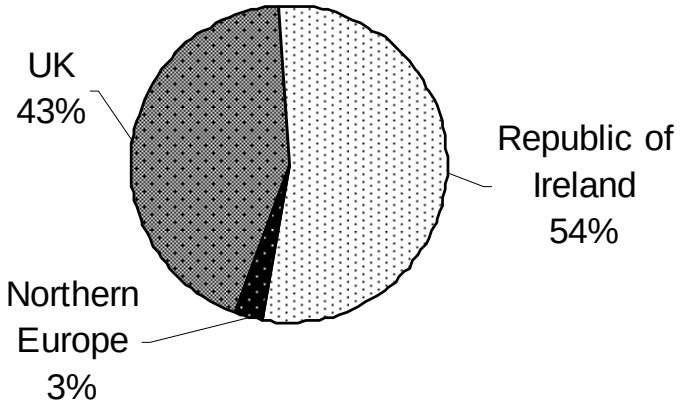


**Figure 16 Domestic and imported peat into the UK 1999 – 2007**

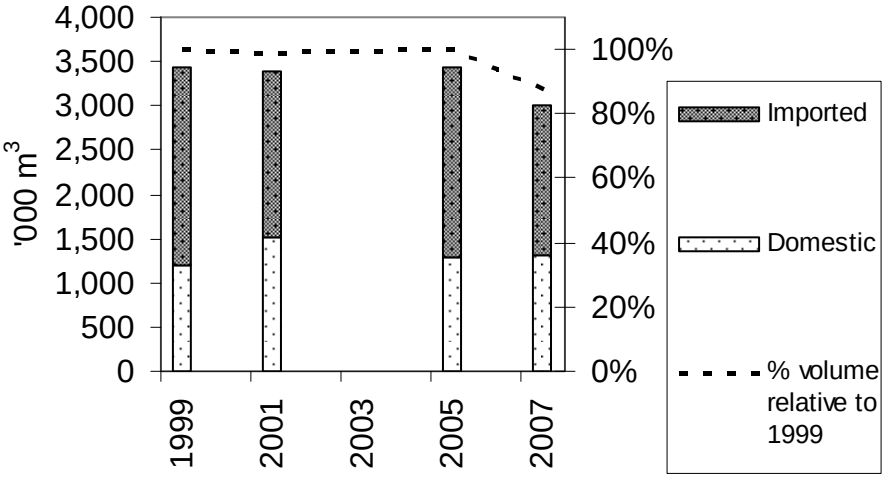



**Table 7 Sources of peat supplied to all horticultural markets in 1999 - 2007 ('000 m³)**

| Source: | Year | Soil improvers | Growing media | Total |
|---|---|---|---|---|
| UK | 1999 | 50.6 | 1154.3 | 1,204.9 |
| | 2001 | 36.0 | 1,486.0 | 1,522.0 |
| | 2005 | 40.7 | 1,254.9 | 1,295.5 |
| | 2007 | 39.1 | 1,269.3 | 1,308.4 |
| Republic of Ireland | 1999 | 91.8 | 1,691.0 | 1,782.8 |
| | 2001 | 59.0 | 1,422.0 | 1,481.0 |
| | 2005 | 103.2 | 1,835.5 | 1,938.7 |
| | 2007 | 10.2 | 1,612.5 | 1,622.7 |
| Northern Europe | 1999 | 2.7 | 442.9 | 445.6 |
| | 2001 | 17.1 | 375.0 | 392.1 |
| | 2005 | 3.2 | 198.6 | 201.8 |
| | 2007 | 0.2 | 81.1 | 81.3 |
| Total | 1999 | 145.1 | 3,288.2 | 3,433.3 |
| | 2001 | 112.1 | 3,283.0 | 3,395.1 |
| | 2005 | 147.1 | 3,289.0 | 3,436.0 |
| | 2007 | 49.4 | 2,962.9 | 3,012.3 |

## 4.4 Sources of bark

Since information was collected by country of origin for the first time in 2005, data for 1999 and 2001 are shown as totals only. The total volume of bark supplied increased from 2005 to 2007. The majority (77%) was used in soil improver products, predominantly surface mulches.

There are various types of bark used in the horticultural industry in the UK but for most purposes coniferous barks are the most suitable. However, UK production of coniferous bark is not sufficient to meet domestic requirements and bark has traditionally been imported from France, Spain and Portugal for many years. Some is imported from Northern Europe, particularly the Baltic States, however this has declined since 2005 (Table 8 ) and the supply from the UK has increased.

Of the total bark volume used by the four horticultural markets in 2007 61% was from the UK.

Just over half of the total bark used was sold to the amateur market, mostly as bark mulch, with the landscape industry also being a significant user of bark in mulch products (Table 10 ). Around 22% of the bark used in growing media in 2007 (down from 55% in 2005) was supplied to professional growers. This indicates that growers are now using a wider range of alternatives to peat because pine bark is relatively expensive as a peat diluant and cheaper alternatives to bark are now more widely available.

**Table 8 Sources of bark supplied to all horticultural markets in 1999 - 2007 ('000 m³)**

| Source: | Year | Soil improvers | % | Growing media | % | Sub-total | % of year |
|---|---|---|---|---|---|---|---|
| UK bark | 2005 | 625.7 | | 208.4 | | 834.1 | 50 |
| | 2007 | 954.7 | | 232.1 | | 1,186.7 | 61 |
| Southern European bark | 2005 | 490.8 | | 74.7 | | 565.5 | 34 |
| | 2007 | 451.7 | | 161.1 | | 612.8 | 31 |
| Northern European bark | 2005 | 200.0 | | 78.8 | | 278.8 | 17 |
| | 2007 | 86.0 | | 62.1 | | 148.1 | 8 |
| Total | 1999 | 1,087.9 | 90 | 126.9 | 10 | 1,214.8 | |
| Total | 2001 | 1,197.3 | 89 | 145.0 | 11 | 1,342.3 | |
| Total | 2005 | 1,316.5 | 78 | 361.9 | 22 | 1,678.5 | |
| Total | 2007 | 1,492.4 | 77 | 455.2 | 23 | 1,947.6 | |

## 4.5 Supply of alternative materials

Alternative materials to peat accounted for 54% of the total of all materials supplied to the UK market in 2007. Most of the alternative materials were used for soil improvement, which is fairly tolerant of a wide range of material properties, in contrast to the more specific requirements of growing media products. The use of alternative materials in growing media products rose considerably in 2007 compared with 2005.

In terms of volume, the biggest changes in 2007 were in the increased use of bark (up 0.27 million $m^3$) and green compost (up 0.34 million $m^3$).

**Use by type of alternative material**

**Bark**: The most commonly used non-peat material; it accounted for 54% of the total alternative materials used in 2007 (Table 9 ). The major use of bark (77%) is in landscaping as a mulch to suppress weed growth and conserve soil moisture, but it also represents 42% of alternative materials use in growing media (mainly pine bark). Graded bark is used by professional growers in blends with peat, to increase the aeration and drainage of the mix for longer-term plants. In Northern Ireland pine bark is less available so composted spruce bark is more commonly used. Finer grade composted barks are used in some peat-free media as a major bulk ingredient, often blended with wood-fibre and a small percentage of loam or green compost.

**Green compost:** The volume of green compost used in 2007 was 1.02 million $m^3$. Green compost now accounts for 28% of the total alternatives used in the four markets surveyed and is the second most important non-peat material. Two thirds of this composted material (68%) is used for soil improvement, but an increasing proportion is now used in growing media (around 0.32 $m^3$ in 2007, 30% of the volume of alternatives in the mixes and 8% of the volume of growing media when the amount of peat is included).

Green compost has to be blended with materials with lower bulk density and nutrient levels for use in a growing medium to avoid problems with the structure/drainage, excess nutrient levels and high bulk density of the end product (which influences handling and transport costs). Studies have shown that for some crops 30% to 40% of the volume of growing media could be green compost and so there is scope for a greater inclusion of this material than the 8% that appears to be being used in 2007.

The composition of source segregated biowaste is changing. If more food waste is collected in the future then more will have to be treated according to the Animal By-Products Regulations within in-vessel and anaerobic digestion facilities. The characteristics of the end products will also change as well as their acceptance by end users, depending on their perceptions of utilising products containing food wastes, especially for growing media. It is advised that these trends are monitored.

In this report, 'green compost' includes all composted materials.

**Timber Industry By-products (wood waste and wood fibre):** By-products from forestry operations, sawmills and chipboard manufacture are increasing in importance as raw materials for composting. The end products have been used with good results in growing media as well as soil improvers. Woodfibre currently accounts for about 5% of alternative materials used in growing media but this may increase if more wood fibre production plants are set up in the UK.

**Coir**: Coir-fibre dust has successfully been used as a peat alternative material for use in growing media formulations because of its good air and water-holding properties. It is used quite extensively in The Netherlands and Belgium, for example for non-soil strawberry production systems and for pot plants. The relatively high price of the material continues to restrict its wider use in the UK but in 2007 coir usage rose to around 3% of the alternative materials used in growing media. Although coir is transported to the UK (mainly from Sri Lanka) it is compacted before shipping and therefore carbon emissions associated with its import are not necessarily higher than import of other growing media ingredients.

**Spent mushroom compost (SMC):** SMC (2005 data) accounted for 10% of peat alternatives for soil improvers in 2007. The change shown since 2005 in Table 9, down by 23%, indicates that the total usage of alternatives has grown diluting the contribution by SMC.

**Loam (soil):** Sterilised loam is used in some peat-free growing media to improve water and nutrient holding characteristics. It is also used in specialist John Innes-type growing media sold to amateur gardeners. Loam accounted for 11% of the volume of alternative materials used in growing media in 2007.

**Cocoa shell:** Cocoa shell is used as a decorative mulch and mostly sold to amateur gardeners. It is relatively expensive and only accounts for a very small proportion of the consumption of alternatives (< 1% in 2007).

**Other materials:** Inorganic materials such as grits, perlite and vermiculite are recorded in Table 9 under 'Others'. They are incorporated into growing media at around 5-10% by volume so only account for a small percentage of the non-peat material used. They have to be mined from finite resources and materials such as perlite require energy use in their manufacture, hence may be viewed as less sustainable than organic peat alternatives. Materials such as clay granules and brewery by-products are also included under 'other materials'.

**Table 9 Supply of alternative materials to all sectors of the UK horticulture market in 2007 ('000 m³)**

| | Quantity of material | | | % change since 2005 |
|---|---|---|---|---|
| | **Soil improvers** | **Growing media** | **Total** | |
| Bark | 1,492.4 | 455.2 | 1,947.6 | 16 |
| Green compost | 694.0 | 321.8 | 1,015.8 | 51 |
| Loam | 21.8 | 119.6 | 141.4 | 45 |
| SMC | 261.0 | 10.5 | 271.5 | -23 |
| Wood waste | 1.6 | 14.9 | 16.6 | -73 |
| Cocoa shell | 6.7 | 1.0 | 7.7 | -43 |
| Coir | 0.3 | 31.2 | 31.5 | 40 |
| Brash | 8.0 | 0.0 | 8.0 | -25 |
| Wood fibre | 7.0 | 47.7 | 54.7 | -5 |
| Others | 30.4 | 71.0 | 101.4 | 89 |
| **Total** | **2,523.1 (70%)** | **1,073.0 (30%)** | **3,596.1** | **19** |
| | **% as a soil improver** | **% in growing media** | **% of total soil improvers** | **% of total growing media** |
| Bark | 77% | 23% | 59% | 42% |
| Green compost | 68% | 32% | 28% | 30% |
| Loam | 15% | 85% | 1% | 11% |
| SMC | 96% | 4% | 10% | 1% |
| Wood waste | 10% | 90% | 0% | 1% |
| Cocoa shell | 87% | 13% | 0% | 0% |
| Coir | 1% | 99% | 0% | 3% |
| Brash | 100% | 0% | 0% | 0% |
| Wood fibre | 13% | 87% | 0% | 4% |
| Others | 30% | 70% | 1% | 7% |
| **Total** | **70%** | **30%** | | |

Table 10 shows the supply of the main alternative materials to each end-user market in 2007. The type of alternative materials used by the different sectors is related to products being used, i.e. soil improvers/mulches or growing media. The vast majority of the bark consumed is as a mulching material used by amateur gardeners and landscapers. Green compost is mainly used as a soil improver by landscapers but consumption of this material by gardeners has increased, probably due its competitive price compared to bark and greater availability through garden centres in the last few years. Spent mushroom compost is used in a very similar way to green compost and a decline in its usage has been seen, possible as a result of competition between the two materials. Landscapers used most of the spent mushroom compost. Loam use is mostly that incorporated in soil improvers and growing media sold to amateur gardeners. Coir is mostly used by professional growers. The other alternative materials are used in much smaller volumes.

**Table 10 Supply of alternative materials by sector in 2007**

| | **Amateur gardener** | | **Local authority** | | **Landscaping** | | **Professional growers** | |
|---|---|---|---|---|---|---|---|---|
| | **'000 $m^3$** | **%** | **'000 $m^3$** | **%** | **'000 $m^3$** | **%** | **'000 $m^3$** | **%** |
| Bark | 1057.7 | 54% | 118.0 | 6% | 670.3 | 34% | 101.5 | 5% |
| Green compost | 442.6 | 44% | 57.8 | 6% | 459.7 | 45% | 55.8 | 5% |
| Loam | 125.1 | 88% | 1.0 | 1% | 7.5 | 5% | 7.8 | 6% |
| SMC | 74.5 | 27% | 24.0 | 9% | 172.5 | 64% | 0.5 | 0% |
| Wood waste | 14.7 | 89% | 0.0 | 0% | 0.0 | 0% | 1.9 | 11% |
| Cocoa shell | 6.3 | 82% | 0.3 | 4% | 0.1 | 1% | 1.0 | 13% |
| Coir | 8.6 | 27% | 0.3 | 1% | 0.3 | 1% | 22.3 | 71% |
| Brash | 0.0 | 0% | 1.0 | 13% | 7.0 | 88% | 0.0 | 0% |
| Wood fibre | 40.3 | 74% | 7.2 | 13% | 0.0 | 0% | 7.3 | 13% |
| Other | 88.9 | 88% | 0.1 | 0% | 0.8 | 1% | 11.6 | 11% |
| **Total** | **1858.6** | **52%** | **209.7** | **6%** | **1318.2** | **37%** | **209.7** | **6%** |

Table 11 shows the trends in the volumes of non-peat materials use since 1999. The amateur gardeners and landscaper sectors are the biggest consumers. The largest increase in volume in growing media is that of non-peat materials used in amateur gardening products, a welcome sign of change.

**Table 11 Supply of alternative materials by sector 1999 - 2007 ('000 m³)**

| | | Amateur gardeners | Local authority | Landscaping | Professional growers |
|---|---|---|---|---|---|
| Soil improvers | 1999 | 557.2 | 185.7 | 944.0 | 0.0 |
| | 2001 | 814.1 | 125.4 | 1,003.5 | 0.0 |
| | 2005 | 1,107.1 | 145.5 | 1,055.9 | 0.0 |
| | 2007 | 1,056.1 | 204.3 | 1,262.6 | 0.0 |
| Growing media | 1999 | 138.1 | 3.8 | 5.6 | 61.8 |
| | 2001 | 189.5 | 16.7 | 39.8 | 100.7 |
| | 2005 | 402.1 | 6.0 | 25.4 | 277.8 |
| | 2007 | 802.4 | 5.4 | 55.6 | 209.7 |
| Total supply | 1999 | 695.3 | 189.5 | 949.6 | 61.8 |
| | 2001 | 1,003.6 | 142.1 | 1,043.3 | 100.7 |
| | 2005 | 1,509.2 | 151.5 | 1,081.3 | 277.8 |
| | 2007 | 1,858.6 | 209.7 | 1,318.2 | 209.7 |

# 5. Conclusions

***The Survey***

The questionnaire based survey obtained data from the producers of soil improver and growing media products made from peat and various alternative materials, and green compost manufacturers. A high degree of co-operation from producers was achieved, as in previous studies.

***Confidence***

The magnitude of any shortfall is estimated to be less than 0.30 million $m^3$, or less than 5% of the total market.

***Trends***

The total amount of materials used in 2007 was similar to that in 2005, with only a small rise, at 6.61 million $m^3$, up from 6.48 million $m^3$. The increase in demand for products continues to grow although the rate of increase of 0.13 million $m^3$ over two years (0.06 million $m^3$ per annum) is slower than in the previous five years when it averaged 0.20 million $m^3$ per annum. The demand for the products has risen from 5.33 million $m^3$ in 1999 to 6.61 million $m^3$ in 2007.

The total amount of peat used declined in 2007 from 2005. This change, whether due to weather or a shift in attitude, was accompanied by an increase in the total market use of materials and an increase in the use of alternatives. Therefore the proportion of peat used in all sectors has fallen again in 2007 to 46% and the proportion of alternatives has exceeded the 50:50 ratio for the first time.

The total market was split between soil improvers at 39% and growing media at 61%, with the former market growing more (4%) than the latter (1%) since 2005. 98% of the peat used was in growing media; but soil improvers accounted for only 2% of the usage as they are dominated by alternatives to peat.

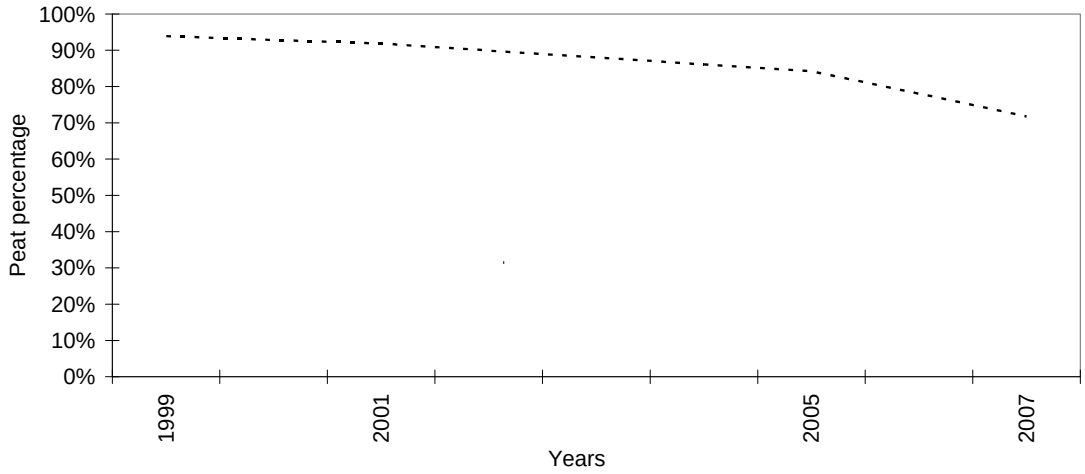
The total usage of alternatives has continued to increase, up by 0.58 million $m^3$ overall in 2007, predominantly in landscaping and amateur gardening use. Importantly, 0.40 million $m^3$ of the overall change across all sectors was due to an increased usage of alternatives in amateur gardening growing media products, helping to reduce the peat content to 72% in this sector's usage. Bark continued to be the main alternative ingredient in growing media (42%), followed by green compost (30%). Their use as components of mixes was 11% and 8%, respectively.

More bark is being sourced from the UK with less from the Baltic region. Across all markets, growth of the usage of bark continues and approached 2 million $m^3$ in 2007. Green compost usage exceeded 1 million $m^3$ and grew by 51% compared with 2005.

Professional growers use only growing media, and the volume of peat used by this sector fell significantly from around 1.1 million $m^3$ in 2005 to 0.9 million $m^3$ in 2007 but, as the volumes of peat alternatives also fell, the proportion of peat was similar at 81%. The professional industry in the UK is becoming increasingly challenged by imported plants and, as the replacement of peat in a growing medium becomes progressively more challenging technically and risks to plant quality increase, the greater the reluctance to change will be.

The amateur gardening market uses both soil improvers and growing media products, and there has been a fairly consistent peat volume usage of around 2.1 million $m^3$ in growing media. However, a small reduction in peat usage in amateur growing media and an increase in the volume of alternatives has accelerated the change recently (Figure 17 ) so that the proportion of peat was down to 72% in 2007.

**Figure 17 Growing media trends in the amateur gardening sector**




The amateur use of soil improver products has shown a significant decrease in the use of peat. As the amateur gardening growing media sector consumes the greatest amount of peat this is the area that should continue to be targeted for further change if the BAP targets are to be met.

## Possible influences on the trends

The increasing volumes of peat alternatives used reflects the commitment and efforts of the growing media producers to support the BAP and to satisfy consumer interest in the environment by developing and providing reduced peat growing media products to both professional and amateur growers.

The introduction of 'reduced peat' formulations by many growing media manufacturers for professional growers has increased the proportion of alternative materials in these products.

The continued dominance of peat in the amateur gardening market is likely to be due to the cost-competitive nature of this market giving manufacturers less opportunity to use more expensive materials. Most of the major brands of amateur gardener 'multi-purpose' growing media and growing bags are now reduced peat rather than 100% peat.

Demands from multiple retailers to reduce peat use have caused significant numbers of growers to move away from pure peat mixes to blends with 10 to 30% of alternative materials over the last few years.

Economic issues and lack of confidence in reduced peat or peat-free growing media has hindered their uptake. Increase in experience and management of new growing media incorporating alternatives have led to their gradual uptake by growers.

The most significant influence on the adoption of reduced peat growing media by professional growers has been their multiple retailer customers, who have policies on peat reduction as part of their Corporate Social Responsibility programmes.

The usage of composted green wastes has increased by 51% since 2005 to 1.02 million $m^3$ due to increased availability and improved composting standards (BSI PAS 100).

## BAP Targets

The percentage of alternatives that made up the supply of soil improvers and growing media to the four main market users (amateur gardening, local authorities, landscapers and professional growers) has increased from 36% in 1999 to 54% in 2007.

The rate of change has increased since 2005 to 3.8% from 1.9% but is still inadequate to meet the 2010 target of 90% alternatives which will require a rate of change of 11.9% per year between 2007 and 2010.

The possible influences of the trends shown in this report should be reviewed to focus effort on addressing storage and performance issues for non peat products, education of amateur gardeners and increasing confidence of growers in non peat products. The long-term supply of suitable peat alternative products also needs to be addressed, for example the possible competing demand for timber by-products as an energy source may increase their cost and/or decrease availability to the horticultural sector.

# 6. References and further information

ODPM ‘Monitoring of peat and alternatives as growing media and soil improvers in the UK, 2001’
http://www.communities.gov.uk/archived/publications/planningandbuilding/monitoringpeat

Defra ‘Monitoring of peat and alternative products for growing media and soil improvers in the UK, 2005’
http://www.defra.gov.uk/science/documents/publications/Peat.pdf

The Composting Association (note: the Composting Association changed its name to the Association for Organics Recycling on 1st August 2008 http://www.organics-recycling.org.uk).

The Growing Media Association www.growingmedia.co.uk

The Waste and Resources Action Programme (WRAP)
www.wrap.org.uk/composting

The UK Peatlands Consortium
http://www.peatlandsni.gov.uk/education/campaign.htm

# 7. Glossary

### Bark

Lignified outer protective tissue from the trunks of one or more types of tree species that is removed at sawmills and may thereafter be aged or composted and screened to provide material that may serve as a growing media constituent, soil improver or mulch. Generally only pine and spruce barks are used in growing media.

### Bulk Density (BD)

Composts and growing media are often sold with a measurement of bulk density being on the basis of 'fresh' or 'as received' weight per litre or cubic metre of material.

### Cocoa shell

The material which becomes separated from the cocoa bean during the roasting process. Cocoa shell is sometimes used as a mulch.

### Coir

A generic name for material derived from the outer husk of a coconut. The fibre portion is used for the production of mats and ropes etc. and the residual pith and dust can be used as a horticultural substrate.

### Compost

A solid particulate material that is the result of composting organic material. Compost has been sanitised and stabilised through the composting process and confers beneficial effects when added to soil and / or used in conjunction with growing media. It specifically excludes materials such as John Innes or Levington 'Compost', which were historically called as 'composts', but which are not based on composted materials and should really be described as growing media.

### Composting

Process of controlled microbiological decomposition of biodegradable materials under managed conditions that are predominantly aerobic and that allow the generation of heat, in order to achieve compost that is sanitised and stable.

### Cubic metre ($m^3$)

Volumetric measure equivalent to 1000 litres and the unit in which growing media or their bulky components are traded and the market size expressed.

**Green and food compost (GFC)**

Composted material derived from the composting of green and food waste. Animal By-Product materials, including catering wastes processed according to the regulations, and other permitted materials may also be included.

**Green and food waste (GFW)**

Material that is biodegradable and permitted to be composted within the Waste Management Licensing and Animal By-Product regulations.

**Green compost (GC)**

Composted material derived from the composting of green waste.

**Green waste (GW)**

Material derived from plants such as trees, shrubs, grass, vegetables, fruit and other plant types. Green waste specifically excludes kitchen, human and animal by-products or catering wastes and wastes that contain non-biodegradable fractions.

**Growing medium/media**

Material (other than soil in situ) in which plants are grown. Note: In this report the term 'growing medium / media' refers to materials that are ready-mixed and sold for growing plants in pots, containers, growing bags and media blocks that specifically exclude soil conditioners and mulches.

**Loam**

A good quality soil composed of a relatively even mixture of three mineral particle size groups: sand, silt, and clay.

**Manufactured woodfibre**

A fibrous material produced by exposing wood chips to steam under high pressure. The proprietary products 'Toresa' and 'Westfibre' are examples.

**Mulch**

A material applied to the surface of a soil or other growing medium to enhance plant growth by retaining moisture, suppressing weeds and increasing biological activity in the soil. In landscaping mulches are also used for their decorative effect. Mulches will gradually be incorporated into the soil by earthworm activity so may need to be replaced from time to time.

**Natural woodfibre**

A by-product of the timber industry produced from the ‘lop and top’ waste left after trees have been removed for timber. It contains a mixture of chipped fine bark, pine needles and small branches. The proprietary product ‘Sylvafibre’ is an example of a natural woodfibre.

**Peat**

Partially decomposed plant residues derived from bogs, mires or fens consisting principally of mosses such as Sphagnum species, sedges or reeds etc. Peat has traditionally been the standard substrate for growing media production in the UK and North-West Europe.

**Peat alternative**

A material with appropriate physical, chemical and biological properties that may be used to partially or completely replace peat in a growing media substrate, soil improver or mulch.

**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. Also known as a soil conditioner.

**Spent Mushroom Compost (SMC)**

Material which remains following the commercial production of edible mushrooms. It is a high nutrient and typically high pH product which is used widely as a soil improver but is less suitable for use as a growing medium component.

**Substrate**

A material or mixture of materials that provide a plant with support, water, air and nutrients.

**Topsoil**

Material with a mineral base which will perform the functions of natural topsoil as defined in BS 3882:2007.

**Wood waste**

Material originating from untreated or biodegradable preservative treated woods from joinery, furniture making and packing materials including woods that have been reused in chipboards and MDF.

# Appendices

1. **Material use by type and original three market sectors 1993 – 2007**

2. **Producers who supplied data**

3. **Survey forms**

# 1. Material use by type and original three market sectors 1993 – 2007

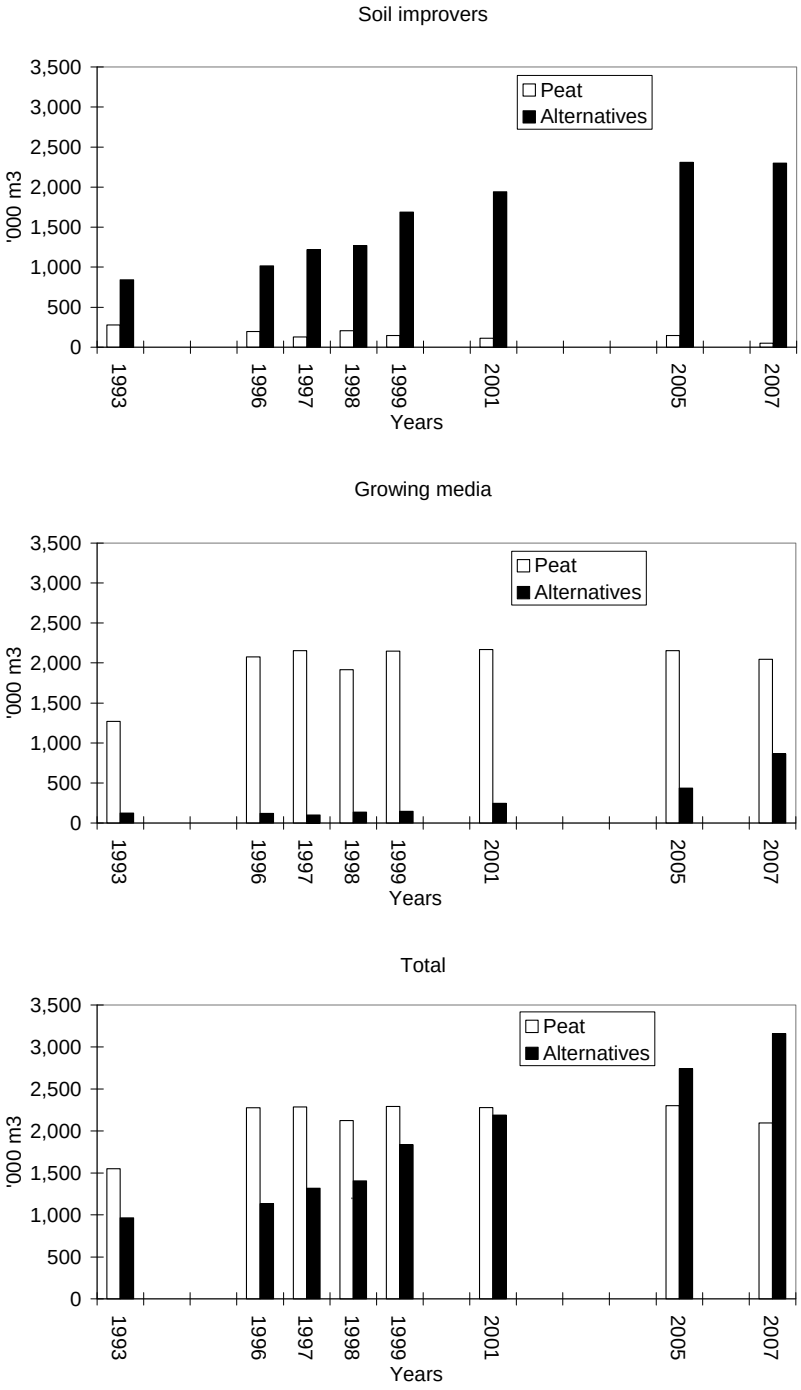
The historical data since 1993 is presented in this Appendix. All of the data excludes the professional grower market and bulk spent mushroom compost (SMC), which were only collected for the first time in 1999 and 1998, respectively.

Data for the total of the three markets and by each of the three market sectors are shown, broken down into soil improvers, growing media and the total, in Figures 18 to 21. Tables 12 to 14 show the proportions of peat and alternatives by each sector and totals over the years surveyed from 1993 to 2007.

Figure 22 shows the proportion of domestic to imported peat over the years 1993 to 2007.

Table 15 shows the usage of peat, according to source, in soil improvers and growing media since 1993.

**Figure 18 Combined use of peat and alternatives by the amateur gardening, local authority and private sector landscaping markets 1993-2007**



## Figure 19 Use of peat and alternatives by the amateur gardening market 1993-2007

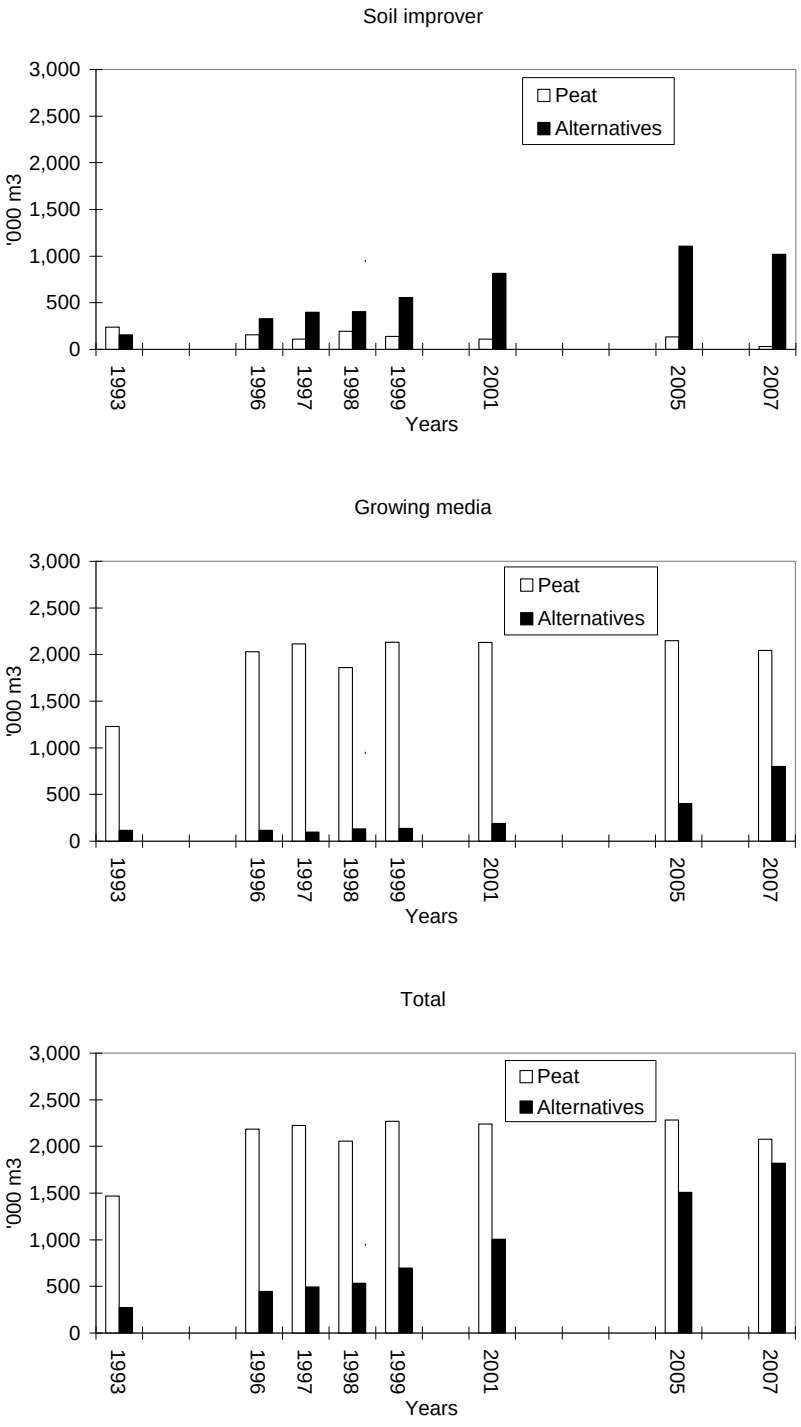
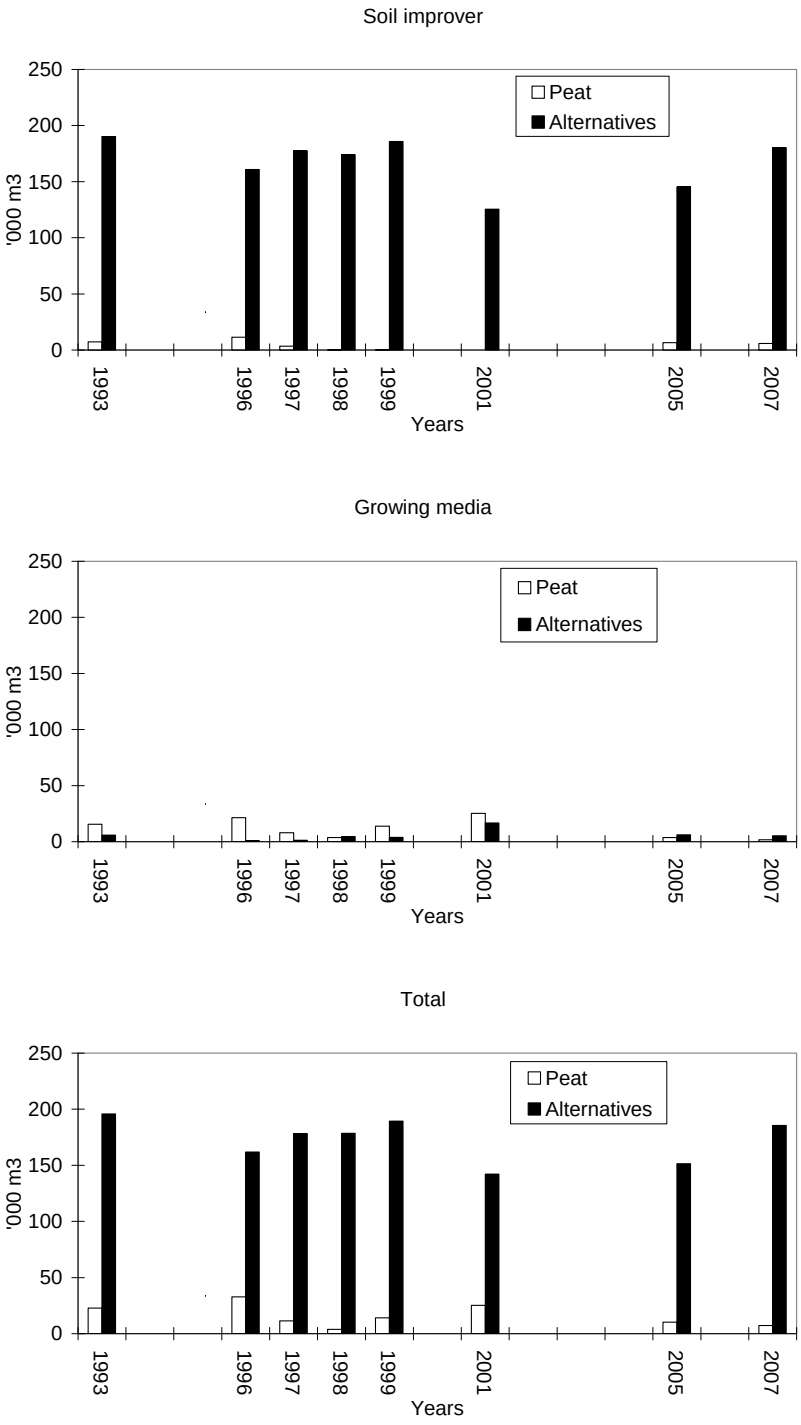


**Figure 20 Use of peat and alternatives by the local authority market 1993-2007**



## Figure 21 Use of peat and alternatives by the landscape contractor market 1993-2007

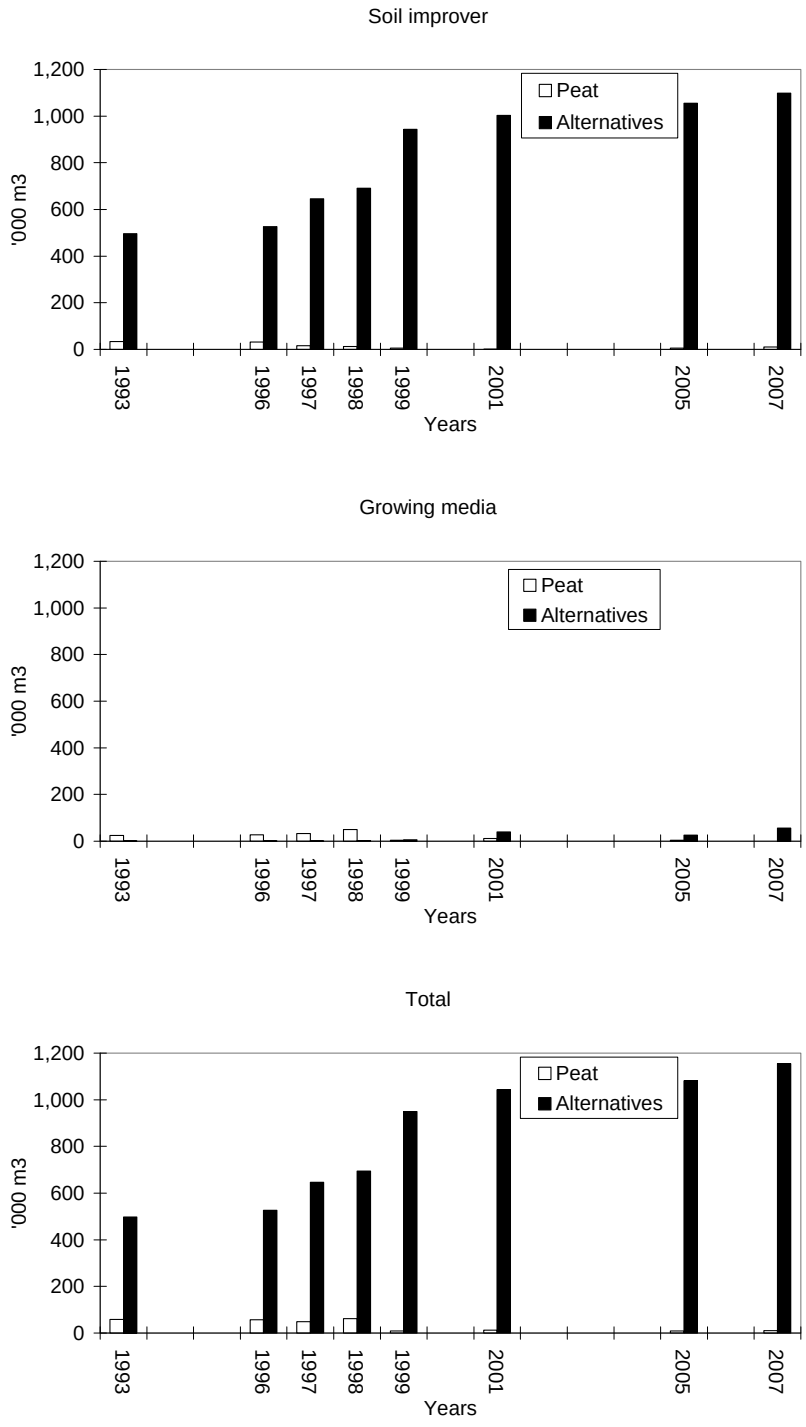


**Table 12 Soil improvers for three market sectors 1993 - 2007 ('000 $m^3$)**

| | 1993 | 1996 | 1997 | 1998 | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|---|---|---|---|
| **Amateur gardeners** | | | | | | | | |
| Peat | 239.4 | 156.0 | 111.0 | 194.5 | 138.4 | 111.0 | 134.3 | 33.4 |
| Alternatives | 156.4 | 328.5 | 398.2 | 404.0 | 479.7 | 736.6 | 1,070.1 | 1,019.1 |
| Sub-Total | 395.8 | 484.5 | 509.2 | 598.5 | 618.1 | 847.6 | 1,204.4 | 1,052.6 |
| % Peat | 60% | 32% | 22% | 32% | 22% | 13% | 11% | 3% |
| **Local authority** | | | | | | | | |
| Peat | 7.2 | 11.5 | 3.5 | 0.2 | 0.2 | 0.1 | 6.5 | 5.7 |
| Alternatives | 190.1 | 160.8 | 177.3 | 174.0 | 171.7 | 111.4 | 121.5 | 180.3 |
| Sub-Total | 197.3 | 172.3 | 180.8 | 174.2 | 171.9 | 111.5 | 127.9 | 186.0 |
| % Peat | 4% | 7% | 2% | 0% | 0% | 0% | 5% | 3% |
| **Landscaping** | | | | | | | | |
| Peat | 33.4 | 30.9 | 16.0 | 12.3 | 6.4 | 1.0 | 6.3 | 10.3 |
| Alternatives | 496.5 | 526.2 | 644.9 | 691.4 | 753.5 | 813.0 | 891.9 | 1,098.6 |
| Sub-Total | 529.9 | 557.1 | 660.9 | 703.7 | 759.9 | 814.0 | 898.2 | 1,108.9 |
| % Peat | 6% | 6% | 2% | 2% | 1% | 0% | 1% | 1% |
| **Total - amateur gardeners, local authority and landscaping only** | | | | | | | | |
| Peat | 280.0 | 198.4 | 130.5 | 207.0 | 145.0 | 112.1 | 147.1 | 49.4 |
| Alternatives | 843.0 | 1,015.5 | 1,220.4 | 1,269.4 | 1,404.9 | 1,661.0 | 2,083.4 | 2,298.1 |
| Total | 1,123.0 | 1,213.9 | 1,350.9 | 1,476.4 | 1,549.9 | 1,773.1 | 2,230.5 | 2,347.5 |
| % Peat | 25% | 16% | 10% | 14% | 9% | 6% | 7% | 2% |

**Table 13 Growing media for three market sectors 1993 - 2007 ('000 $m^3$)**

| | 1993 | 1996 | 1997 | 1998 | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|---|---|---|---|
| **Amateur gardeners** | | | | | | | | |
| Peat | 1,229.7 | 2,028.7 | 2,114.9 | 1,862.4 | 2,131.5 | 2,130.2 | 2,148.8 | 2,043.5 |
| Alternatives | 116.2 | 116.7 | 96.4 | 129.8 | 138.1 | 189.5 | 402.1 | 802.4 |
| Sub-Total | 1,345.9 | 2,145.4 | 2,211.3 | 1,992.2 | 2,269.6 | 2,319.7 | 2,550.9 | 2,846.0 |
| % Peat | 91% | 95% | 96% | 93% | 94% | 92% | 84% | 72% |
| **Local authority** | | | | | | | | |
| Peat | 15.6 | 21.2 | 7.9 | 3.7 | 13.8 | 25.2 | 3.7 | 1.6 |
| Alternatives | 5.7 | 1.0 | 1.1 | 4.6 | 3.8 | 16.7 | 6.0 | 5.4 |
| Sub-Total | 21.3 | 22.2 | 9.0 | 8.3 | 17.6 | 41.9 | 9.7 | 7.0 |
| % Peat | 73% | 95% | 88% | 45% | 78% | 60% | 38% | 23% |
| **Landscaping** | | | | | | | | |
| Peat | 24.7 | 26.3 | 32.6 | 49.9 | 3.0 | 11.5 | 3.5 | 0.3 |
| Alternatives | 1.1 | 0.9 | 1.4 | 2.6 | 5.6 | 39.8 | 25.4 | 55.6 |
| Sub-Total | 25.8 | 27.2 | 34.0 | 52.5 | 8.6 | 51.3 | 28.9 | 55.9 |
| % Peat | 96% | 97% | 96% | 95% | 35% | 22% | 12% | 1% |
| **Total - amateur gardeners, local authority and landscaping only** | | | | | | | | |
| Peat | 1,270.0 | 2,076.2 | 2,155.4 | 1,916.0 | 2,148.3 | 2,166.9 | 2,156.0 | 2,045.5 |
| Alternatives | 123.0 | 118.6 | 98.9 | 137.0 | 147.5 | 246.0 | 433.6 | 863.4 |
| Total | 1,393.0 | 2,194.8 | 2,254.3 | 2,053.0 | 2,295.8 | 2,412.9 | 2,589.6 | 2,908.8 |
| % Peat | 91% | 95% | 96% | 93% | 94% | 90% | 83% | 70% |

## Table 14 Total usage for three market sectors 1993 - 2007 ('000 $m^3$)

| | 1993 | 1996 | 1997 | 1998 | 1999 | 2001 | 2005 | 2007 |
|---|---|---|---|---|---|---|---|---|
| **Amateur gardeners** | | | | | | | | |
| Peat | 1,469.1 | 2,184.7 | 2,225.9 | 2,056.9 | 2,269.9 | 2,241.2 | 2,283.1 | 2,077.0 |
| Alternatives | 272.6 | 445.2 | 494.6 | 533.8 | 617.8 | 926.1 | 1,472.2 | 1,821.6 |
| Sub-Total | 1,741.7 | 2,629.9 | 2,720.5 | 2,590.7 | 2,887.7 | 3,167.3 | 3,755.3 | 3,898.5 |
| % Peat | 84% | 83% | 82% | 79% | 79% | 71% | 61% | 53% |
| **Local authority** | | | | | | | | |
| Peat | 22.8 | 32.7 | 11.4 | 3.9 | 14.0 | 25.3 | 10.2 | 7.3 |
| Alternatives | 195.8 | 161.8 | 178.4 | 178.6 | 175.5 | 128.1 | 127.5 | 185.7 |
| Sub-Total | 218.6 | 194.5 | 189.8 | 182.5 | 189.5 | 153.4 | 137.6 | 193.0 |
| % Peat | 10% | 17% | 6% | 2% | 7% | 16% | 7% | 4% |
| **Landscaping** | | | | | | | | |
| Peat | 58.1 | 57.2 | 48.6 | 62.2 | 9.4 | 12.5 | 9.8 | 10.6 |
| Alternatives | 497.6 | 527.1 | 646.3 | 694.0 | 759.1 | 852.8 | 917.3 | 1,154.2 |
| Sub-Total | 555.7 | 584.3 | 694.9 | 756.2 | 768.5 | 865.3 | 927.1 | 1,164.8 |
| % Peat | 10% | 10% | 7% | 8% | 1% | 1% | 1% | 1% |
| **Total - amateur gardeners, local authority and landscaping only** | | | | | | | | |
| Peat | 1,550.0 | 2,274.6 | 2,285.9 | 2,123.0 | 2,293.3 | 2,279.0 | 2,303.1 | 2,094.9 |
| Alternatives | 966.0 | 1,134.1 | 1,319.3 | 1,406.4 | 1,552.4 | 1,907.0 | 2,517.0 | 3,161.4 |
| Total | 2,516.0 | 3,408.7 | 3,605.2 | 3,529.4 | 3,845.7 | 4,186.0 | 4,820.0 | 5,256.3 |
| % Peat | 62% | 67% | 63% | 60% | 60% | 54% | 48% | 40% |

**Figure 22 Domestic and imported peat supply into the UK excluding professional growers 1993 – 2007**

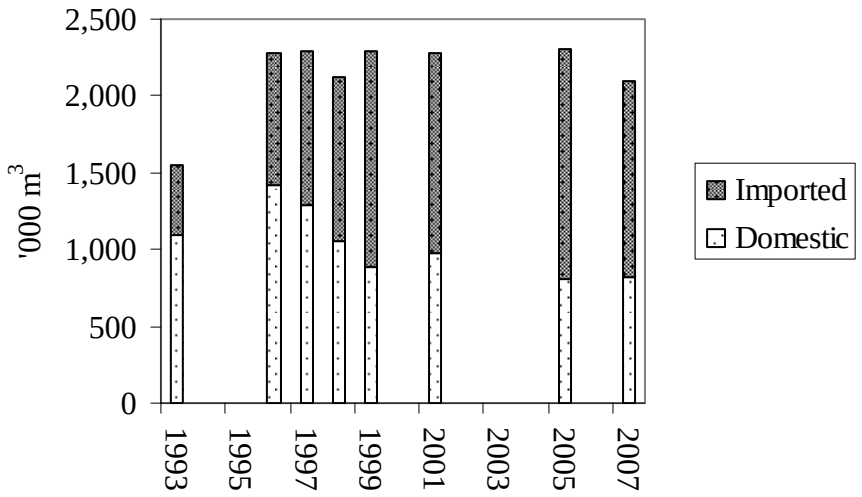


**Table 15 Sources of peat supplied to the three market sectors 1993 - 2007 ('000 $m^3$)**

| Source | Year | Soil improvers | Growing media | Sub-total | % of total |
|---|---|---|---|---|---|
| UK | 1993 | 153.8 | 938.0 | 1,091.8 | 70% |
| | 1996 | 53.8 | 1371.2 | 1,425.0 | 63% |
| | 1997 | 50.6 | 1241.0 | 1,291.6 | 56% |
| | 1998 | 111.2 | 945.3 | 1,056.5 | 50% |
| | 1999 | 50.6 | 836.4 | 887.0 | 39% |
| | 2001 | 36.0 | 934.8 | 970.8 | 43% |
| | 2005 | 40.7 | 765.4 | 806.1 | 35% |
| | 2007 | 39.1 | 784.9 | 823.9 | 39% |
| Irish Republic | 1993 | 126.0 | 321.1 | 447.1 | 29% |
| | 1996 | 143.0 | 691.0 | 834.0 | 37% |
| | 1997 | 79.7 | 877.4 | 957.1 | 42% |
| | 1998 | 90.8 | 851.7 | 942.5 | 44% |
| | 1999 | 91.8 | 1182.9 | 1,274.7 | 56% |
| | 2001 | 59.0 | 1070.8 | 1,129.8 | 50% |
| | 2005 | 103.2 | 1372.4 | 1,475.7 | 64% |
| | 2007 | 10.2 | 1260.5 | 1,270.7 | 61% |
| N. Europe | 1993 | 0.2 | 10.9 | 11.1 | 1% |
| | 1996 | 1.7 | 14.0 | 15.7 | 1% |
| | 1997 | 0.3 | 37.2 | 37.5 | 2% |
| | 1998 | 5.0 | 118.9 | 123.9 | 6% |
| | 1999 | 2.7 | 128.9 | 131.6 | 6% |
| | 2001 | 17.1 | 161.3 | 178.4 | 8% |
| | 2005 | 3.2 | 18.1 | 21.3 | 1% |
| | 2007 | 0.2 | 0.1 | 0.3 | 0% |
| Total | 1993 | 280.0 | 1270.0 | 1,550.0 | |
| | 1996 | 198.5 | 2076.2 | 2,274.7 | |
| | 1997 | 130.6 | 2155.6 | 2,286.2 | |
| | 1998 | 207.0 | 1915.9 | 2,122.9 | |
| | 1999 | 145.1 | 2148.2 | 2,293.3 | |
| | 2001 | 112.1 | 2166.9 | 2,279.0 | |
| | 2005 | 147.1 | 2156.0 | 2,303.1 | |
| | 2007 | 49.4 | 2045.5 | 2,094.9 | |

# 2. Producers who supplied data

A Aston Compost Services
A Cook (Contractors)
A W Jenkinson Forest Products
A.W.O Bedford & Partners
Agricultural Supply Co (Fairford) Ltd
Agripost Ltd
Agrivert Limited
Amenity & Horticultural Services Ltd
Amgen Cymru
Ballaneven Organic Compost Ltd
Banks Amenity Products Ltd
Biffa Leicester Ltd
Biowaste ( Recycling ) Ltd
Birch Airfield Composting Services Ltd
Bord na Mona (Shamrock)
Bracken Down Ltd
Bryn Compost Limited
Bulrush Horticulture Ltd
C B Environmental Ltd
Cardiff City & County Council
Carmarthenshire Environmental Resources Trust
County Mulch Ltd
Crapper & Sons Landfill Ltd
Cricket Saint Thomas Estate
Eco Composting Ltd
Eco-Sci Ltd
Erin Horticulture Ltd
Fairfield Materials Management Ltd
Fertile Fibre
Fife Council
Forth Resource Management Limited
Fountain Forestry Ltd
Freeland Horticulture
G P Plantscape
Gem/Joseph Metcalf Ltd
Giffords
Greenacre Composting Enterprises
Grundon Waste Management Ltd
Hadfield Wood Recyclers
Hightown Composting Company Ltd
Hills Waste Solutions Ltd
Huntingdon Recycling Ltd
John Bourne Ltd
Keenan Recycling Ltd
L & P Peat Ltd (Humax)
Laverstoke Park Produce LLP
M & B Bark & Horticultural Supplies Ltd
M&M Skips and Soils
Material Change Limited
McGill Environmental Systems (Ireland) Ltd
Melcourt Industries Ltd
Messrs RW Dalglish
Moorland Green
Mytum & Selby Waste Recycling Ltd
Natural World Products Ltd
Neales Waste Management
Newbourne Farm Composting
O R M
Olus Environmental Ltd
Organic Recycling Limited
Organic Waste Recycling
Petalshell Associates Ltd
Potters Waste Management
Premier Waste Management Limited
R J T Ainsworth Ltd
Reviva Composting Ltd
Roffey Ltd
Scotbark
Scottish Water
Severn Waste Services
Short Group Limited
Simpro Ltd

SITA UK Ltd
Somerset Peat Producers
South West Water Ltd
Stirling Council
Sunshine Garden Products Ltd
Swansea City Waste Disposal Company Limited
T J Composting Group Ltd
TEG Environmental PLC
Terra Ecosystems
The Scotts Company (UK) Ltd
TMA Ltd
Tracey Timber Recycling Ltd
Tree Fella plc
Tref
Vapogro Ltd (Avoncrop)
Veolia E S Hampshire Ltd
Viridor Waste Management Ltd
W.T. Clarke & Son
Welshlands (R & C Platt Ltd)
West London Composting Ltd
Westland Horticulture
White Moss Horticulture Ltd
Widnes Skip & Reclaim Ltd
William Sinclair Horticulture
William Tracey Ltd
Worm Tech Ltd
WRS Composting Limited
Yorkshire Aggregates Quarrying Limited
Yorwaste Limited

# 3. Survey forms

**VOLUME ($m^3$) OF PEAT AND ALTERNATIVES 2007**

**Producer Code**_____

| MARKET | | | | | | | |
|---|---|---|---|---|---|---|---|
| **MATERIAL** | **Amateur Gardeners** | | **Local Authorities** | | **Landscapers** | | **Professional Growers** |
| | Soil Improvers inc. mulches & planting composts | Growing Media | Soil Improvers inc. mulches & planting composts | Growing Media | Soil Improvers inc. mulches & planting composts | Growing Media | Growing Media |
| UK peat | | | | | | | |
| Irish peat | | | | | | | |
| Other peat (specify country of origin) | | | | | | | |
| Bark (specify country of origin) | | | | | | | |
| Coir fibre | | | | | | | |
| Loam | | | | | | | |
| Cocoa shell | | | | | | | |
| Green compost | | | | | | | |
| Manufactured woodfibre | | | | | | | |
| Natural woodfibre | | | | | | | |
| Wood waste (eg chipboard) | | | | | | | |
| Paper waste | | | | | | | |
| Perlite | | | | | | | |
| Vermiculite | | | | | | | |
| Other eg brewers waste, grit (please specify) | | | | | | | |

**VOLUME ($m^3$) OF COMPOSTED MATERIALS 2007** **Producer code**_____

1. Total Tonnage Composted:_____ tonnes

2. Total Volume Produced:_____ $m^3$ Note: If all data is in tonnes, please state here _____

3. Total Volume Supplied **Direct to End-Users** ($m^3$)

| **MARKET** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Amateur Gardeners/ Retail Outlets** | | **Local Authorities** | | **Landscapers** | | **Topsoil manufacture** | **Professional Growers** |
| Soil Improvers inc. mulches & tree planting composts | Growing Media used in containers | Soil Improvers inc. mulches & tree planting composts | Growing Media used in containers | Soil Improvers inc. mulches & tree planting composts | Growing Media used in containers | Ex-situ [1] | Growing Media |
| | | | | | | | |

4. **Additional** Volume Supplied **to Bulk Distributors or Peat Blenders** ($m^3$)

| | **Name of company** | **Distributor or Blender?** | **Soil Improvers inc. mulches & planting composts** | **Growing Media** |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

5. Total Volume Supplied to Other Sources: landfill engineering _____ $m^3$; agriculture _____ $m^3$;

land reclamation projects_____ $m^3$; other _____ $m^3$

[1] Ex situ is the volume of compost which either you have mixed with excavated soil/inert minerals or you have supplied to a topsoil manufacturer for this purpose (excluding compost for retail bagging - please identify this as volume supplied to bulk distributors to avoid double counting).