Inadequate fruit and vegetable consumption is seen as one of many factors that can play a role in premature death. The European Commission’s recent White Paper on Nutrition, overweight and obesity-related health issues looks to promote greater fruit and vegetable consumption as one of a number of tools towards improving public health, particularly regarding the prevention of chronic diseases such as heart disease, cancer, type 2 diabetes and obesity.

The following publication aims to give an overview of selected statistics and indicators linked to the fruit and vegetable chain in the EU.

Key points

There are considerable differences in the amount of fresh fruit and vegetables available for human consumption in the Member States (see Figure 1 below).

The harvested production of the main types of fruit and vegetable in the EU-27 remained remarkably stable between 1996 and 2006. There was growth in the volume of fruit and vegetables imported from non-member countries, particularly for fruit and nuts (up 37.2 % between 2000 and 2007).

Price levels of fresh fruit and vegetables in Member States were considerably different; in Bulgaria average prices were about half the average across the EU-27, while prices were about one third higher than the EU-27 average in Ireland. Between 1996 and 2006, consumer prices of fruit and vegetables rose most strongly (when compared with the change for all goods and services) in Hungary and Latvia, and declined (in relative terms) in Slovakia and Lithuania.

Figure 1: Gross human apparent consumption (availability for human consumption) of selected fruit and vegetables, available Member States, 2006 (kg per head) (1)

Minimum and maximum levels (either end of vertical line), median share (circle)

Source: Eurostat (Supply balance sheets)

(1) Portugal (2005 and fruit only), Finland (2005). Data not included for Denmark (partial data for 2004) and Spain (2003).
Data not available: the Czech Republic, Cyprus, Latvia, the Netherlands, Slovenia and Slovakia.
Availability of fruit and vegetables for consumption

As outlined in Figure 2, there are considerable variations in the amount of different types of fresh fruit and vegetables available for human consumption in the Member States. An average of 29 kg of oranges per inhabitant (see footnote 8 of Figure 2 for country coverage) were at the disposal of EU consumers in the period between 2002 and 2006, compared with about 19 kg of apples, 12 kg of fresh tomatoes and about 6 kg of grapes and fresh peaches. Per capita availability of fruit and vegetables was highest in Greece and France and lowest in Lithuania and the United Kingdom.

There were considerable differences in the availability of individual types of fruit and vegetable for human consumption; the amount of apples available varied from an average 7 kg per head in Bulgaria for the years 2003, 2004 and 2006 to 94 kg in Denmark for the years 2003 and 2004, while for fresh tomatoes the range was from 3 kg per head in Lithuania (the average between 2003 and 2007) to 60 kg per head in Greece (the average for the period 2002 to 2006).

Figure 2: Gross human apparent consumption (availability for human consumption) of selected fruit and vegetables, average of latest data available (2003-2007) (kg per head) (1)

Fruit and vegetable primary production

Fruit and vegetable holdings in all Member States are typically small; on average less than 10 hectares in terms of utilised agricultural area. In most of the Member States that joined the EU in 2004 and 2007, the average size of each holding is less than 1 hectare.

The majority (51.6 %) of holdings growing fresh vegetables, melons and strawberries in the EU-27 in 2005 were located in Romania and Poland – see Table 1. By the nature of the necessary climatic and growing conditions, citrus farms were concentrated in the Mediterranean countries.
In terms of harvested production (by weight), the main vegetables in 2006 were tomatoes (15.8 million tonnes), carrots (5.3 million tonnes) and onions (5.0 million tonnes), with apples (11.7 million tonnes), oranges (6.7 million tonnes) and pears (2.8 million tonnes) being the most produced fruit.

Production of fruit and vegetable tended to be highly concentrated in just a few Member States – see Table 2. Italy and Spain accounted for a majority of the tomates (63.4 %), oranges (83.2 %) and pears (52.9 %) produced in the EU-27 in 2006, underlining favourable climatic and topographical conditions. A little over half (55.5 %) of apple production was concentrated in Poland, Italy and France. Similarly, a little over half (52.7 %) of onion production was concentrated in Spain, the Netherlands and Poland. Of the main fruit and vegetable, the production of carrots was more evenly distributed, with seven Member States accounting for 9 % or more of the EU-27’s harvested production in 2006.

Table 2: Harvested production of selected fruit and vegetable, 2006

<table>
<thead>
<tr>
<th></th>
<th>EU-27 harvested production (1 000 tonnes)</th>
<th>Main producers (% share of EU-27 total)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Italy (40.0%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spain (22.2%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greece (9.6%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portugal (6.3%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>France (4.7%)</td>
<td></td>
</tr>
<tr>
<td>Tomatoes (1)</td>
<td>15 827.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrots (2)</td>
<td>5 312.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onions (3)</td>
<td>5 045.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apples (4)</td>
<td>11 712.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oranges (5)</td>
<td>6 877.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pears (5)</td>
<td>2 832.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Eurostat (Agricultural products statistics)

(2) Ireland (2000), Spain (2005), and Portugal (2003).

Given the impact that weather, pests and disease can have on output levels, there was a remarkably stable level of harvested production between 1996 and 2006 for most of the main fruit and vegetable produced in the EU-27 – see Figure 3 (overleaf).

The greatest fluctuation during this period was in the harvested production of tomatoes. Between the relative lows (1997, 2002 and 2006) and the highs (1999 and 2004) there was a difference of about 3 million tonnes of tomatoes. In the case of oranges, the harvested production level of 2006 was the highest recorded between 1996 and 2006, some 13 % above the level of 2005.
Consumers may attach importance to the origin of the products they purchase, as well as the price or quality of goods. This may explain the split in retailing between specialised retailers and non-specialised retailers (such as supermarkets) which are often said to have considerable bargaining strength when negotiating prices with suppliers and wholesalers.

Table 3 shows that down the various handling stages of the fruit and vegetable chain, the wholesale trade of fruit and vegetables was the largest activity (other than in terms of the number of enterprises, where there was a higher number in specialised retail trade activities concerning the sale of fruit and vegetables).

Table 3: Structural characteristics of fruit & vegetable processors, wholesalers & retailers, 2005 (1)

<table>
<thead>
<tr>
<th>Specialised fruit &amp; vegetable processors (NACE Group 15.3) (2)</th>
<th>Specialist fruit &amp; vegetable wholesalers (NACE Class 51.31)</th>
<th>Specialised fruit &amp; vegetable retailers (NACE Class 52.21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprises</td>
<td>Persons employed (1 000)</td>
<td>Turnover (EUR 1 000 million)</td>
</tr>
<tr>
<td>EU-27</td>
<td>10 200</td>
<td>283.0</td>
</tr>
<tr>
<td>BE</td>
<td>136</td>
<td>7.0</td>
</tr>
<tr>
<td>BG</td>
<td>311</td>
<td>8.9</td>
</tr>
<tr>
<td>CZ (3)</td>
<td>100</td>
<td>3.9</td>
</tr>
<tr>
<td>DE</td>
<td>646</td>
<td>31.0</td>
</tr>
<tr>
<td>EE</td>
<td>20</td>
<td>0.6</td>
</tr>
<tr>
<td>IE</td>
<td>29</td>
<td>1.8</td>
</tr>
<tr>
<td>EL</td>
<td>527</td>
<td>8.9</td>
</tr>
<tr>
<td>ES</td>
<td>1 281</td>
<td>36.2</td>
</tr>
<tr>
<td>FR</td>
<td>1 372</td>
<td>26.4</td>
</tr>
<tr>
<td>IT</td>
<td>2 024</td>
<td>32.2</td>
</tr>
<tr>
<td>CY</td>
<td>41</td>
<td>0.6</td>
</tr>
<tr>
<td>LV</td>
<td>28</td>
<td>0.9</td>
</tr>
<tr>
<td>LT</td>
<td>258</td>
<td>1.1</td>
</tr>
<tr>
<td>LU</td>
<td>2</td>
<td>:</td>
</tr>
<tr>
<td>HU</td>
<td>544</td>
<td>10.9</td>
</tr>
<tr>
<td>MT</td>
<td>2</td>
<td>:</td>
</tr>
<tr>
<td>NL</td>
<td>135</td>
<td>9.9</td>
</tr>
<tr>
<td>AT</td>
<td>106</td>
<td>3.7</td>
</tr>
<tr>
<td>PL</td>
<td>1 126</td>
<td>40.2</td>
</tr>
<tr>
<td>PT</td>
<td>221</td>
<td>3.9</td>
</tr>
<tr>
<td>RO</td>
<td>300</td>
<td>5.0</td>
</tr>
<tr>
<td>SI</td>
<td>69</td>
<td>1.2</td>
</tr>
<tr>
<td>SK</td>
<td>84</td>
<td>1.1</td>
</tr>
<tr>
<td>FI</td>
<td>108</td>
<td>2.0</td>
</tr>
<tr>
<td>SE</td>
<td>182</td>
<td>4.8</td>
</tr>
<tr>
<td>UK</td>
<td>441</td>
<td>39.8</td>
</tr>
</tbody>
</table>

Source: Eurostat (Structural business statistics)

(1) Within the NACE classification, the values reported for the specialist processing or retail trade of fruit and vegetables provide only part of the activity associated with these items. Within retail trade, a large proportion of fruit and vegetables may be handled by supermarkets/hypermarkets (their relative importance, however, cannot be determined). As regards manufacturing activities, a number of processes use fruit and vegetables, such as in the production of chemicals, animal feed, or beverages (which are outside the activities covered by fruit and vegetable processing).

(2) EU-27, rounded estimates.

(3) 2004.
Among the Member States for which data are available, the average size of fruit and vegetable processing enterprises ranged from about four persons employed in Lithuania to 90 in the United Kingdom in 2005. The average size of specialist fruit and vegetable wholesalers ranged from four persons employed in Bulgaria to 21 in Lithuania, while the average size of specialist fruit and vegetable retailers was notably smaller, ranging from one person employed in Finland to six persons in the Netherlands.

Specialised fruit and vegetable wholesalers across the EU-27 generated turnover of EUR 113.0 billion in 2005 and employed 374,800 people, corresponding to 2.7% of the total turnover generated for all wholesale and commission trade (excluding motor vehicles and motorcycles) and 3.9% of the wholesale and commission trade workforce. Specialised fruit and vegetable wholesalers accounted for a considerably higher share of wholesale activity in Spain, with some 12.4% of the workforce and 6.2% of turnover.

In contrast, specialised fruit and vegetable retailers in the EU-27 accounted for a much smaller proportion of retail turnover (0.6%) and employment (1.0%). This relatively low figure may be explained, at least in some countries, by a move away from daily purchases of food and beverages at specialist food retailers in favour of less frequent trips to supermarkets or hypermarkets (sales of fruit and vegetables in these retail outlets cannot be isolated from other food or non-food purchases).

Figure 4: Main non-Community partners for imports of fruit and vegetables, EU-27 (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Other</th>
<th>South Africa</th>
<th>Morocco</th>
<th>USA</th>
<th>Brazil</th>
<th>Ecuador</th>
<th>Turkey</th>
<th>Costa Rica</th>
<th>Colombia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>36.7%</td>
<td>5.0%</td>
<td>3.9%</td>
<td>5.0%</td>
<td>5.7%</td>
<td>9.2%</td>
<td>6.0%</td>
<td>20.3%</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>42.4%</td>
<td>5.2%</td>
<td>4.5%</td>
<td>5.0%</td>
<td>6.2%</td>
<td>5.9%</td>
<td>7.4%</td>
<td>6.2%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

Figure 4 shows that the EU-27 imported 22.6 million tonnes of fruit and vegetables in 2007 from non-Community countries, 16.4% more than the quantity imported in 2000. Much of this growth came from fruit and nuts (up 37.2%) and was despite a marked decline in the imports of fresh, frozen and preserved vegetables (down 20.3%).

As the EU-27 imported fruit and vegetables from a wide range of countries, the top five sources only accounted for a little over one third of all imports in 2007. Thailand’s share of the EU-27’s import market for fruit and vegetables declined sharply from 20.3% in 2000 to 7.4% in 2007.

Table 4 indicates the quantities of certain manufactured fruit and vegetables products that were sold, exported and imported by the EU-27 in 2006. A little over 15.5 million tonnes of preserved tomatoes were sold in the EU-27, by far the highest quantity among manufactured fruit and vegetables products.

### Table 4: Sold production and external trade of selected (top ten available) manufactured fruit and vegetable products, EU-27, 2006 (tonnes)

<table>
<thead>
<tr>
<th></th>
<th>Sold production</th>
<th>Exports</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preserved tomatoes; whole or in pieces (excl. by vinegar or acetic acid)</td>
<td>15,504,466</td>
<td>331,917</td>
<td>16,433</td>
</tr>
<tr>
<td>Fruit, prepared or preserved, n.e.c. (excluding Müsli)</td>
<td>2,089,070</td>
<td>219,723</td>
<td>978,891</td>
</tr>
<tr>
<td>Unconcentrated tomato puree and paste</td>
<td>1,618,938</td>
<td>37,032</td>
<td>2,157</td>
</tr>
<tr>
<td>Jams; marmalades; fruit jellies; fruit or nut purees and pastes; being cooked preparations (excluding of citrus fruit, homogenized preparations)</td>
<td>1,597,449</td>
<td>80,431</td>
<td>24,032</td>
</tr>
<tr>
<td>Concentrated tomato puree and paste</td>
<td>1,287,615</td>
<td>306,412</td>
<td>117,750</td>
</tr>
<tr>
<td>Vegetable by-products and waste for animal consumption, n.e.c.</td>
<td>1,281,547</td>
<td>13,996</td>
<td>1,837,872</td>
</tr>
<tr>
<td>Vegetables, fruit, nuts and other edible parts of plants, prepared or preserved by vinegar or acetic acid</td>
<td>1,212,419</td>
<td>87,346</td>
<td>276,906</td>
</tr>
<tr>
<td>Frozen fruit and nuts uncooked or cooked by steaming or boiling in water</td>
<td>910,533</td>
<td>65,071</td>
<td>372,727</td>
</tr>
<tr>
<td>Prepared or preserved shelled beans; lentils; by vinegar or acetic acid, dried, frozen</td>
<td>937,754</td>
<td>81,193</td>
<td>117,750</td>
</tr>
<tr>
<td>Prepared or preserved olives (excluding by vinegar or acetic acid, dried, frozen)</td>
<td>746,139</td>
<td>235,527</td>
<td>105,336</td>
</tr>
</tbody>
</table>

Source: Eurostat (Statistics on the production of manufactured goods - Prodcom)
Import penetration (imports divided by apparent consumption (calculated as sold production minus exports plus imports) among the top ten fruit and vegetable products was highest (59.2%) for vegetable by-products and waste for animal consumption not elsewhere classified, followed by prepared and preserved fruit not elsewhere classified (34.4%) and frozen fruit and nuts (31.1%).

Prices of fruit, vegetables and potatoes

The price of fruit and vegetables varied considerably in 2006 among the Member States (see Figure 5). In Bulgaria, the price level of total fruit, vegetables and potatoes was almost half of the EU-27 average, in sharp contrast to Ireland, where prices were about one third higher (30.9%) than the EU-27 average.

Figure 5: Relative price level indices for total fruit, vegetables and potatoes (based on Purchasing Power Parities), 2006 (EU-27 = 100)

Between 1996 and 2006, there were contrasting developments in the evolution of consumer prices for fruit and vegetables when compared with average price inflation (as measured by the all-items harmonised indices of consumer prices), as outlined in Figure 6.

On average across the EU-27, the relative price of fruit declined by 3.3% and that of vegetables by 1.6% in relation to price increases observed for all-items (3). In some Member States, such as Slovakia and Lithuania, there were sharp reductions in the relative price of both fruit and vegetables. In other Member States, such as Spain, Latvia and Hungary there were relatively steep price increases. In countries such as Poland and Austria, there were contrasting developments between the evolution of prices for fruit and for vegetables.

No adjustments were made to the weight of fruit and vegetables in the all-items index over the ten years, as this was relatively minor and 1996 weights are unavailable for a number of Member States.

Figure 6: Relative change in consumer prices for fruit, vegetables and potatoes compared with the all-items index for consumer prices, 1996–2006 (%)
METHODOLOGICAL NOTES

DETAILS OF DATA SOURCES
The information presented in this publication is largely drawn from the Eurostat database ‘Food’, which brings together data that provide information on food products and the food sector which are considered relevant for food safety purposes. For completeness, the primary reference data sources have been given and are also detailed below.

Food: from farm to fork statistics
The domain is structured in 4 main areas:
- Food consumption;
- From production to distribution: organic production, volume of production and trade of quality wines, volume of production and sales of food products, relative price levels of food products;
- Inputs to the food chain: volume of agricultural primary production, volume of seeds, consumption of pesticides, main countries from which food products enter the EU territory;
- Which actors are involved in the food chain: number of enterprises and agricultural holdings, number of restaurants.

Statistics on the structure of agricultural holdings (FSS)
Farm structure survey data are used to collect information on agricultural holdings in the Member States at different geographic levels (Member States, regions, districts) and over periods, they provide a base for decision making in the Common Agricultural Policy.

- Two kinds of farm structure surveys are carried out by the Member States:
  - a basic survey (full scope Agricultural Census - AC) every 10 years,
  - sample based intermediate surveys.

Structural business statistics (SBS)
SBS data have been collected within the legal framework provided by Council Regulation No 58/97 of 20 December 1996 concerning structural business statistics. Only the SBS data set relating to annual enterprise statistics has been used in this publication. Data are presented using the NACE Rev. 1.1 classification.

External trade statistics
External trade statistics are an important data source for EU decision-makers, being used extensively for multilateral and bilateral negotiations within the framework of the common commercial policy.

In this publication, external trade statistics relating to the trading of goods between a Member State and a non-Community country are used. Extra-EU trade imports are recorded at the frontier country where the goods are placed under the customs procedures. Extra-EU trade statistics do not record exchanges involving goods in transit, placed in a customs warehouse or given temporary admission.

Statistics on the production of manufactured goods - Prodcom
Prodcom contains statistics on the production of manufactured goods together with related external trade statistics (see above). It is based on a product classification called the Prodcom List which consists of about 4 500 headings relating to manufactured products.

Price statistics: purchasing power parities (PPPs)
PPPs are produced as a multi-country exercise where Eurostat is responsible for the coordination and calculation of the final PPP results and National Statistical Institutes (NSIs) conduct necessary price surveys and provide other input data.

The PPP expenditure classification adheres to the definitions, concepts, classifications and accounting rules of the European System of Accounts (ESA 1995).

The main statistics of interest used in this publication are:
- Purchasing power parities;
- Price level indices.

Price statistics: harmonised indices of consumer prices (HICP)
Harmonized indices of consumer prices (HICPs) are designed for international comparisons of consumer price inflation. The coverage of the HICPs is defined in terms of ‘household final monetary consumption expenditure’, by reference to the national accounts concepts of ESA 1995. Expenditures are classified according to the COICOP/HICP (Classification Of Individual Consumption by Purpose adapted to the needs of HICPs).

DEFINITIONS OF VARIABLES AND INDICATORS

Gross human apparent consumption (in supply balance sheets):
Apparent consumption = (commercial production + estimated own account production for self-consumption + imports + opening stocks) – (exports + usage input for processed food + feed + non-food usage + wastage + closing stocks).

Holding: a single unit both technically and economically, which has single management and which produces agricultural products. The holding may also provide other supplementary (non-agricultural) products and services.

Number of enterprises: a count of the number of enterprises active during at least a part of the reference period.

Number of persons employed: is defined as the total number of persons who work in the observation unit (inclusive of working proprietors, partners working regularly in the unit and unpaid family workers), as well as persons who work outside the unit who belong to it and are paid by it (for example, sales representatives, delivery personnel, repair and maintenance teams).

Turnover: comprises the total invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties.

Purchasing power parities (PPPs): these are spatial price indices, which, just as temporal price indices allow making real/volume comparisons in time, are designed to make real/volume comparisons in space or across countries. Therefore, they are key statistical tools for international volume and price level comparisons.

PPPs are defined as currency conversion rates that both convert to a common currency and equalise the purchasing power of different currencies. They eliminate the differences in price levels between countries in the process of conversion of economic indicators expressed in a national currency to an artificial common currency, called a purchasing power standard (PPS).

Price level indices (PLIs), EU-27=100: these are the ratios of PPPs to exchange rates. By expressing the PPPs in a common currency unit, they provide a measure of the differences in price levels between countries by indicating for a given product group or aggregate the number of units of the common currency needed to buy the same volume of the goods and services in each country. At the level of GDP they provide a measure of the differences in the general price levels of countries.

ABBREVIATIONS AND SYMBOLS

EU European Union
EU-27 27 EU Member States
BE Belgium BG Bulgaria
CZ Czech Republic DK Denmark
DE Germany EE Estonia
IE Ireland EL Greece
ES Spain FR France
IT Italy CY Cyprus
LV Latvia LT Lithuania
LU Luxembourg HU Hungary
MT Malta NL Netherlands
AT Austria PL Poland
AT Portugal RO Romania
SI Slovenia SK Slovakia
FI Finland SE Sweden
UK United Kingdom : not available

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Agriculture, forestry and fisheries

- Food : From farm to fork statistics
- Food consumption
- From production to distribution - Which quality label and at which price
- Inputs to the food chain
- Actors involved in the food chain

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