
MUSHROOMS

INTRODUCTION

CALU CROP PRODUCTION GUIDES

January 2009

Ref: 021401



INTRODUCTION

This factsheet is designed to give those interested a general overview of mushrooms as a crop. Future factsheets will address cultivation techniques for different mushroom species.

A mushroom is a fruiting body of a fungus. Fungi are a complex order of organisms that do not contain chlorophyll and therefore cannot photosynthesise. Some fungi produce mushrooms in order to reproduce, releasing spores into the atmosphere from gills or pores of the mushroom. Unlike plants that source their energy from the sun through photosynthesis, fungi derive all of their energy from their growth medium, through biochemical decomposition processes.

Roughly 35 mushroom species have been cultivated commercially worldwide. Of these, 20 are cultivated on an industrial scale. The majority of cultivated species are both edible, and possess medicinal properties.

The most commonly (almost exclusively) cultivated species of mushroom in the UK is the white button mushroom (*Agaricus bisporus*) also known as the table mushroom or cultivated mushroom. The button mushroom occurs naturally in fields and meadows across Europe and North America, however the strain of button mushroom sold today is, in fact, a mutant strain discovered in Pennsylvania in 1926. The original cultivated strain was light brown, however at the time white was fashionable.

Another strain of *A. bisporus* is the Portobello mushroom which has retained the brown colour but is much larger. With the rising profile of edible fungi promoted by Asian countries, other species of fungi are now being cultivated in the UK. There are numerous species of native and exotic fungi that can be easily cultivated; are extremely good for health; and are economically viable to farm.

MARKET FOR MUSHROOMS

The world market for the mushroom industry was valued at over US \$40 billion in 2001. The industry consists of, edible mushrooms (US \$30 billion), medicinal products (US \$9-10 billion) and wild mushrooms (US \$4-5 billion). The majority of this production occurs in China who produced 70.6% of the total world production in 2002. While the white button mushroom remains the highest overall world production, its relative contribution is decreasing due to a dramatic increase in other species.

The UK mushroom market is worth £320 million with roughly 150 growers. Northern Ireland is one of the main mushroom growing regions, supplying retailers throughout the UK. In the Republic of Ireland mushroom production (*Agaricus bisporus*) has been a major success story in diversification, providing income and employment for small farms. Mushrooms are the single most important food crop in Ireland with a total farmgate value of €124 million. 70% of Ireland's mushrooms are exported, generating €95 million in export income. However, recent competition from the Dutch and Polish industries has led the Irish Department of Agriculture and Food to create the Mushroom Taskforce to address the industry's limitations.



Cronfa Amaethyddol Ewrop ar gyfer Datblygu Cwledig
Ffwrdd ym Buaboddi mewn Ardaloedd Gwledig
The European Agricultural Fund for Rural Development
Europe Investing in Rural Areas



The Irish industry is based on a satellite grower system, whereby growers are linked into central compost companies which supply spawned compost. These companies then collect, grade and market the finished product. The industry is made up mainly of family managed units consisting of three to five polythene tunnels. Over 70% of growers have contracts with central marketing groups.

Mushrooms are easily damaged and require careful hand picking, storing and good packaging and presentation. Mushrooms can be sold fresh or dried. Considerable value can be added to the primary product through the extraction of the mushroom's complex sugars, used for potent and unique health enhancing medicinal products. Processed products can also add extra value to the product in the form of sauces and teas etc.

The functional and organic food markets are developing rapidly and could allow mushroom sales to increase; mushrooms are an excellent functional food. Mushrooms can be marketed towards health food stores, grocery stores, supermarkets, the catering industry and restaurants. They can be sold at farmers markets, to chefs and directly through the internet.

Table 1 lists some of the varieties of mushrooms which might find niche markets in the UK.

Table 1: Gourmet mushroom varieties

Common name(s)	Scientific name	Characteristics
Oyster mushroom	<i>Pleurotus ostreatus</i>	Temperate and sub-tropical Woodland fungi. Wood decomposer. Possesses medicinal qualities
Shiitake mushroom, Golden Oak mushroom	<i>Lentinula edodes</i>	Native to East Asia. Wood decomposer. Possesses medicinal qualities
Hen of the woods, Maitake	<i>Grifola frondosa</i>	Perennial woodland fungi. Possesses medicinal qualities
Enokitake, Golden needle mushroom	<i>Flammulina velutipes</i>	Native to Asia, growing on the Chinese Hackberry tree. Wood decomposer. Possesses medicinal qualities
Cauliflower mushroom, White fungus	<i>Sparassis crispa</i>	Parasitic on the roots of various species of pine and spruce. Possesses medicinal qualities
Lion's mane mushroom, Hedgehog mushroom, Bearded tooth mushroom	<i>Hericium erinaceus</i>	Parasitic on hardwoods. Possesses medicinal qualities