

# Forest fungi

## Introduction



*Shiitake mushrooms are the easiest to produce and manage in Ireland.*

Exotic mushrooms produced from hardwood logs can be an extra income earner on many broadleaf forests.

The demand for edible wild mushrooms is rapidly increasing, as more people are discovering them. At present, most of the exotic mushrooms on sale in restaurants and

supermarkets in Ireland are imported. There are many types of exotic mushrooms; however, in Irish conditions shiitake (*Lentinula edodes*) mushrooms are the easiest to produce and manage. They are well known for their medicinal properties, health benefits and great taste.

### Market

As of yet, the market in Ireland mainly comprises gourmet restaurants and health food shops. Farmers' markets are another outlet. Shiitake mushrooms sell at €18-20/kg.

### Facts and figures

The harvesting of hardwood trees is covered under the Woodland Improvement Grant Scheme. This grant is available at a rate of €750/ha for the first thinning and €500/ha for the second thinning. Costs include:

- inoculum costs €75/1,000 plugs (inoculates 20 logs);
- inoculum labour one-man day per logs (€100);
- wax €5/1,000 plugs; and,
- irrigation (€20).

Harvesting is a relatively inexpensive process and is primarily done by hand. Food handling courses are necessary to sell into shops and restaurants. Exotic mushrooms are the most expensive products imported into Ireland per kg. Approximately €600,000 worth of fresh or chilled wild mushrooms and €800,000 worth of frozen wild mushrooms are imported annually to Ireland. Exotic mushrooms are one of the primary non-meat sources of iron. Shiitakes range in colour from tan to dark brown with broad, umbrella-shaped caps, wide open veils, and tan gills. Shiitakes can be up to three inches in diameter and their caps have a soft, spongy texture. When cooked, shiitake mushrooms have a mild, yet rich and woody flavour, with a meaty texture. Shiitakes adapt well to most cooking techniques. The delicate flavour and meaty texture are ideal for stir fries, pasta, soups, entrées and side dishes.

## What's involved?

### Preparing logs

The process of producing mushrooms involves cutting hardwood logs in the dormant season. Oak and beech are the most productive tree species for fungi production. Logs with a diameter of between 8cm and 12cm are cut into 1m lengths and stacked under the canopy until they are ready to be inoculated. It is important not to damage the bark during this process. This is to stop unwanted fungi entering the log.

### Inoculation

After a period of three weeks the inoculation process starts with plugs impregnated with shiitake mycelium. This involved drilling holes 2cm deep every 12 cm diagonally around the circumference of the log. A 12cmX1m log will take 50 plugs. A total of 1,000 plugs will do 20 logs. Once the holes are drilled, the inoculated plugs are tapped in using a hammer.

These plugs are then sealed with a food quality wax (avoid paraffin wax). This is to protect the mycelium in the plugs and stop unwanted fungi growing in the inoculated area.

### Coliation period

Once logs are inoculated they are left as stacked piles under the forest canopy. The canopy protects the logs from wind, sunlight and drying out.

It is important that the logs do not dry out below 35% moisture. If this happens, it will kill the mycelium.

To stop logs from drying out, it is advisable to set up a system to spray them with water.

This needs to be untreated spring water.

After 12 months, the ends of the logs will change colour. This shows that the mycelium is colonising the log.

### Harvesting

After a period ranging between 12 and 18 months, the shiitake mushrooms should be ready for harvesting. There are two ways this can be facilitated:

- A) Immerse the logs in untreated spring water – this is done over a 24-48-hour period. Logs are removed and within 24 hours a flush of shiitake mushrooms should appear on them. These are picked and prepared for market. This can be done twice a year for up to six years.

- B) Another method to get logs to produce shiitake mushrooms is to hit them with a blunt instrument. This will shock the log into producing mushrooms.



*Shiitakes growing in a log.*

## Making it work

Thanks to John O'Connell for help in producing this fact sheet. John farms 9ha of broadleaf woodland in Kilcornan, Co. Limerick.

The crop was planted in 1996. John has

been actively thinning and managing his forest for the past 15 years. In 2007, he started producing shiitake mushrooms.

Today, he is one of the leading producers of exotic mushrooms in the country.

John's forest is an excellent example of the how both timber and non-timber products can mutually benefit the land owner.

Broadleaf forests need careful management; fungi do too.

### Further information

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