

Mushroom Box™ Growing Instructions: Commercial Growing Techniques

www.mushroombox.co.uk

Introduction

Many people are drawn to the prospects of small-scale mushroom cultivation. Whereas this is perfectly possible with button mushrooms and portabella, it is rarely possible to compete with the large scale commercial growers either in terms of yield or cost. However, with various types of oyster mushroom, small-scale growers have a real advantage, and can be competitive and successful.

These instructions have been developed in response to the many enquiries we have each week. It is clearly impossible for us to describe commercial growing techniques in detail to every caller, so we have prepared this document to provide a more in-depth view of what is involved.

Which type of mushroom should be grown?

This is one of the first questions we are usually asked. For relatively inexperienced growers setting out, you will want to grow a mushroom that is:

- 1) Easy to grow
- 2) Predictable
- 3) High yielding
- 4) Commands a reasonable price.
- 5) Can be grown on pasteurised substrates rather than requiring time-consuming and costly sterilisation.

There are actually several mushrooms that fit these requirements. For growers intending to start growing for profit, we would suggest the following types (in order of preference):

Blue/Grey Oyster: The Mushroombox(TM) strain of blue/grey oyster is as near as we have ever come to a perfect mushroom from the growers perspective. It is able to grow over a wide temperature range (12C-25C, although it is best grown at 16-22C), which allows growers to produce mushrooms throughout the entire year, even during the winter, without spending a fortune on heating costs. It is an extremely strong strain with very high yields, and is very resistant to contaminants. Three to four

flushes are typical, with an interval of around 2weeks between flushes, although it will often go on to produce a few additional weaker flushes.

Pink Oyster: The Mushroombox(TM) strain of pink oyster is extremely fast-growing, and can yield its first crop of mushrooms in as little as three weeks under ideal conditions. It is a very high yielding with fast throughput. It does however require warmer temperatures, so many growers prefer to grow this species mainly in the summer (in the UK) to avoid excessive heating requirements. Ideal growing temperature is around 18-25C, although it will grow quite happily at 30C. Pink oyster mushrooms are rather strong-tasting compared to other mushrooms, and if fried at high temperature until crispy, is somewhat reminiscent of bacon. Three to four flushes are typical, with an interval of around 1-2weeks between flushes, although it will often go on to produce a few additional weaker flushes.

Elm Mushroom: This is an almost pure white form of oyster mushroom. It is almost as easy to grow as the Blue/grey oyster, and the Mushroombox(TM) strain of elm mushroom is very high yielding. It is considered by many to have a slightly more desirable taste than the blue/grey oysters. Three to four flushes are typical, with an interval of around 2weeks between flushes, although it will often go on to produce a few additional weaker flushes.

Shiitake: With the Mushroombox(TM) strain, and specific substrates (eg hardwood sawdust), it is absolutely possible to grow reliably and successfully using pasteurisation techniques. However, shiitake is much slower than most oysters, which isn't ideal for growers starting out. Typically, it takes around 6months to the first flush, however, with our strain, and with careful management, it is possible to produce the first flush at 3-4months. Three flushes are typical, with an interval between flushes of around 2-4weeks.

Yellow oyster: This mushroom is strongly appealing for it's bright yellow colour, although growers forfeit a considerable amount of yield compared to other oysters, and it tends to flush fewer times. Two flushes is typical, with an interval of around 2 weeks between flushes.

King Oyster/Summer King: This species is much lower yielding, but is sought-after as a gourmet mushroom by chefs, who are willing to pay good prices. The standard Mushroombox(TM) king oyster strain requires a period of cold in order to trigger fruiting (~ two weeks at c.10-15C), which can be difficult to achieve during the summer without refrigeration. The summer strain is intended to solve this problem, as it does not require the cold shock to produce mushrooms. Two or three flushes is typical, with an interval of 2-4weeks between flushes

Wine Cap (aka King stropharia, Garden Giant): This is not an easy mushroom to grow indoors, due to the long delay between colonisation and fruiting. Indoors, it is best grown in mycobags, and after colonisation, cased with a 20-30mm layer of moist peat. However, be prepared for a wait of 3months before mushrooms are produced. It is better grown in outdoor woodchip beds, and left to grow itself. The size and taste of these mushrooms are very attractive to chefs and consumers alike, and well worth

waiting for. Three or more flushes typical, but the duration between flushes is entirely dependent on the weather – varying between a week and six months! Outdoor beds can be routinely topped-up (once every 1-2years) with fresh woodchips for an ongoing crop.

Methods for growing:

Shiitake and King oysters are best grown in mycobags, and stripped of the bag when the time comes for fruiting. Blue-grey oysters, pink oysters, yellow oysters and elm mushrooms however, are best grown in disposable hanging polythene tubing, or reusable stackable plastic containers (eg storage containers or lidded buckets), with holes or slits for the mushrooms to grow out of.

Pasteurisation

Various methods of pasteurisation are possible, but heating to 70-80C, for two hours is the simplest and most effective. For small-scale commercial process, this can be achieved in a recycled oil drum, with top removed, raised on blocks using either a wood fire or propane burners underneath. Make up a mesh inner basket out of fine wire mesh, and fill this with the substrate prior to lowering into the water. A concrete block will be needed to prevent the dry substrate trying to float, and a block and tackle or other lifting equipment will greatly facilitate entry and removal – as the substrate will be a lot heavier once it has absorbed water. Remember that the substrate will displace a large quantity of water, so ensure that the barrel is only partly filled prior to lowering in the sawdust.

Preparing for growing / Colonisation

This method is best for blue/grey oyster, pink oyster, yellow oyster and elm mushroom. It can also be used for king oysters:

Once the substrate has been pasteurised, the excess water should be drained off, and the substrate spread out on a freshly-cleaned work surface to cool down. As soon as it is cooled (ie below 30C), tie a knot in the end of virgin polythene tubing (or cable-tie it), and start filling with the pasteurised substrate. Ideally, the tubing should be between 50cm and 2m long, and 20-30cm in diameter when filled. As the substrate starts to fill the bag, sprinkle in a small amount of spawn every 100-150mm in height. Once the bag is filled, bang it on the ground a few times to settle the contents (which will allow more to be added). When it is filled again, tie-off or cable tie the top of the bag. Cut 'X' slits in the bag about 200mm apart across the whole surface, and puncture a few drainage holes in the very bottom to allow any excess water to drain out. Stack the polythene tubes on their sides somewhere clean for 3-4weeks for colonisation (no need for any light and minimal requirement for ventilation).

Fruiting

Once the tubes of substrate are fully colonised, they should be transferred to the growing room, where the growing conditions should be altered to encourage fruiting – ie regular changes of air using fans on timers, 12hours of light (fluorescent tubes or LED lighting on timers) and a decrease in temperature. It is also necessary to introduce moisture into the grow room to prevent drying that would occur as a result of the increased ventilation.

(King Oysters and Shiitake will need a cold shock in order to encourage fruiting. For shiitake, 48hours at 5-10C should be sufficient. For King oysters, 10-16C for two weeks is effective)

Within a few days you should observe 'pinning' – where baby mushrooms, looking initially like small pins, start being produced. These will grow rapidly over a period of 3-5days, at which point they should be harvested. Oyster mushrooms generally grow in clumps (except King Oysters), and these clumps should be gently twisted to remove. Blue-grey oysters, king oysters, yellow oysters and elm mushrooms should all be harvested before the top edge of the mushroom start to become wavy. Eventually the mushrooms will turn almost inside out, forming trumpet shapes – by which time they are very much past their best.

Most commercial growers forfeit the later, weaker flushes, often replacing substrate after only two flushes, to improve output, at the expense of efficiency.

As well as hobby-scale spawn and associated products, Mushroombox(TM) also supplies bulk quantities of spawn (from 1kg – 40kg or more), bulk substrate (in 20kg quantities) and layflat tubing / mycobags for growing in. Please visit our website for purchases, or for more information on mushroom-growing.

<http://mushroombox.co.uk>