

# Shiitake growing in Finland

Finland is the most sparsely populated country in the European Union: just five million inhabitants populate its 340,000 km<sup>2</sup>. The Fins adore eating wild mushrooms, but aren't all that keen on cultivated mushrooms. Annual consumption per head is just 300 grams. However, when it comes to shiitake production Finland performs exceptionally well.



Mrs Vesterbacka demonstrates the perforation process.

Photos: Mycelia

The total annual shiitake production is 250 tons. Of this 20% is headed for the domestic market, the rest is exported. There are three main production centres. Polar Shiitake and a number of smaller growers in the east together produce about 125 tons. The group around Mykora, in the same region, produces 50 tons, and roughly the same amount is grown by the Emperor Shiitake growers in the west, near Turku.

By European standards, shiitake growing in Finland enjoys a long tradition. We were first invited to Finland more than 10

years ago by Mykora, daughter company of Kemira and a giant on the mushroom stage. Their commercial director was a huge shiitake fan. At the time Mykora purchased fresh shiitake from a series of small growers, who all worked using the same technology: approximately 1kg of sawdust substrate pressed into a sausage shaped plastic bags and sterilised. The bags were inoculated with liquid inoculum, produced by the State Scientific Research Institute. Mykora had plans to start large scale shiitake cultivation, but other priorities caused the plan to

be abandoned. On this occasion our trip was limited to the region around Turku, where we visited Marko Vesterbacka, the substrate production plant of Emperor Shiitake and two of their production farms.

## Vesterbacka

Marko Vesterbacka and his wife run a modest, in this case 1 man and 1 woman, company in Sammi, 200 kilometres north of Turku. They work using a variation on the method mentioned above

In an elongated PP bag with a central opening a blend of sawdust and bran is pressed to form a 1 kg-sausage. After filling, the top of the bag is folded over. Pasteurisation at 95 degrees Celsius is followed by a cooling down period and inoculation with grains of spawn. According to Mrs Vesterbacka grains give better results than liquid inoculum, as the material used has higher uniformity. When the substrate in the bags is fully white, the top of the sealed bag is perforated using needles. Two weeks later another two rows of perforations are added and after six weeks the fruit bodies start to appear. After each harvested the next flush is immediately induced by immersing the bags. This allows six successive flushes to be picked at one-week intervals. The total yield is on average 20%, which is not bad at all for such a low tech production system.

The entire production cycle takes place in a concrete building, where Marko has set



Vesterbacka substrate maturing.

By Magda Verfaillie, Mycelia, Belgium

up transparent plastic 'growing rooms'. Around 1000 substrate bags are hung horizontally from wooden racks each week. There is little climate control to speak of: when immersed the substrate blocks saturate fully with water, and if needed the floor is sprayed as the mushrooms develop. The heating is powered by wood, which is luckily in good supply to help survive the arctic winter temperatures, which can fall to -30 degrees Celsius. The mushrooms are of the very highest quality and their constantly good sales price makes a substantial contribution to the family's income.

### Emperor Shiitake

Emperor is a longer story. The production plant at Mietoinen, to the north of Turku, consists of two adjacent buildings, one for substrate and one for mushroom production. This last building was originally owned by the Japanese company Kanebo. They imported blocks from Japan to produce shiitake for export. This idea lacked feasibility in the long term, and its running was handed over to Mytec, who added a substrate production unit with Japanese machinery. When the Japanese pulled out the company came into American ownership and was re-christened Mycoski. After some years Mycoski ceased operating and the building stood empty for a while. The current group of two investors (Jukka Kyrölä and Heikki Vanhanen) and two growers (Jukka-Pekka Isotupa and Jari Kipinoinen) breathed new life into the company in 2006.

Emperor now produces 6000 substrate blocks weekly and 1 ton of class 1 mushrooms. Jari and his wife Tiina gave us a complete guided tour. Ann, the wife of Börje Blomback, responsible for commercialising Emperors mushrooms in Sweden, interpreted for us.

With true Finnish accuracy to details and hygiene Tiina and her team operate a full production line of substrate blocks weighing 1.5 kg. The production process mirrors the Japanese model, and is derived from the system used by the previous owners. A mixture, mainly comprising chopped beech, wheat and bran is moistened to 60 %, then automatically bagged into Microsacs by the Japanese machine. The compact substrate blocks with a central opening are then pasteurised at 105 degrees Celsius, cooled then inoculated with spawn on grains (*Mycelia M 3776*). The fully sealed bags are then arranged in stackable crates and transported to one of the large, climate controlled halls. This method means that 72000 substrate blocks complete the incubation and riping process at the same time, a phase that lasts for 12 weeks.

### Much loved product

Tiina's end product is removed from the Microsac and supplied to the growers in the group. One is her husband Jari, who grows his mushrooms in the building next door and the other is Jukka-Pekka, who runs a farm some 20 km away in Laitila.

We visited both farms, where the



Jukka-Pekka in a growing room.

mushrooms are harvested from the substrate blocks over a period of 17 weeks. To save on labour the blocks are not immersed in liquid, but are sprayed with water in between flushes. This offers an added advantage of staggered growth so that mushrooms can still be picked each day. We were highly impressed by the extremely hygienic conditions on the farms and equally by the superb quality of the mushrooms. Apparently the shiitake has a shelf life of three weeks, with hardly any loss of quality, which helps explain how they achieve a constant price of 4 to 5 euros per kilo. Smaller examples fetch a higher price as they are much loved by Scandinavian chefs.

It was a lovely experience to meet these hard working Fins personally and to witness the level of knowledge and precision they devote to their produce. We enjoyed some very constructive discussions which we hope will lead to further optimisation of production and higher profits.



Tiina with mushrooms ready for harvest.



Substrate mixture ready to be moistened at Emperor.