Specialty Tour de France

By Roel Dreve and Magda Verfaillie (ChampiGourmet report)

The HLP organised its annual study trip from 8 to 15 May 2011. Whereas Japan was the destination last year, this year a Tour de France was on the agenda.

23 participants from Germany, the Netherlands, Belgium and Switzerland put their names down for a trip that set out from Griesheim in Germany. After a stop-off at a company in Switzerland, we headed for France where we visited growers in the Loire valley and Brittany, ending up, as any Tour de France, on the Champs Elysées. As usual, the focus of the HLP trip was specialty mushroom growing and substrate preparation.

Difficult Maitake market

Saint Aubin is a small village in the French-speaking part of Switzerland near the French border. Patrice Collaud, manager of **ChampiGourmet SA**, grows Maitake (Grifola frondosa) and Pleurotus eryngii in Kühne's former mushroom-growing farm there. To complete his product range he recently started buying substrates from Lentin de la Buche (see below) as well. These substrates are spawned with Pioppino (Agrocybe aegerita), the Indian oyster and the pearl oyster mushrooms (Pleurotus pulmonarius and Pl. ostreatus). Regrettably we were unable to visit the cellar in which they are grown. ChampiGourmet is the largest, if not the only, professional grower of Grifola in Europe. Collaud grows two very different Mycelia Maitake varieties: a pale, slow-growing variety (M9820) and a dark, more active variety (M9827). The Swiss market prefers the pale variety, probably because these were the first ones to be grown commercially. ChampiGourmet is not doing as well as would be expected. As is often the case with 'high-end' mushrooms, all it takes is a small number of kilograms of Maitake per week to saturate the market. Collaud would prefer to concentrate on growing this one variety, but reality dictates otherwise. More than 10 years ago, he started out as a customer of SIC, a producer of Maitake substrate that turned out to be short-lived. In the absence of a new supplier, Collaud resorted to buying a series of Japanese machines to produce his own substrate. For the first few years he paid his dues, but he was not able to recoup them in his product. The result: Végétec had to close its doors until it could find finance. Once the money was in place, Végétec rose from the ashes as ChampiGourmet. In the meantime, Collaud had got growing down to a fine art. He can control Maitake and Eryngii fruiting perfectly now - extremely important if you are building up a market. But the market is tough. Maitake is virtually unknown, and quite expensive as well. This decorative and delicious mushroom regularly gets free publicity in the press, which doubles its sales - from very low to low. But once the immediate effect has ebbed away, its popularity wanes again, which is extremely frustrating. The market for king oyster mushrooms is growing, but the price war with Korean imports is deadly. The sales figures say it all: ChampiGourmets' annual production of Maitake is barely 10 tons, and 30 tons of king oyster mushrooms. To date, 90% of its sales are through the wholesale market, but Collaud hopes that he will be able to improve his profit margins by selling more products direct. He is cautiously optimistic about the future.

Grifola in filtered bags at ChampiGourmet.

Lentin de la Buche

From Lyon we travelled to Bruno Henry's substrate company **Lentin de la Buche** in Monétay-sur-Loire.

Bruno Henry and MagdaVerfaillie in front of blocks spawned with Mycelia shiitake variety 3710 at Lentin de Buche.

Lentin de la Buche produces 8000 tonnes of incubated Oyster mushroom and shiitake substrate per year.

Henry comes from the region and originally started a livestock farm with his brother. In 1982 Henry and his wife set up a company producing incubated shiitake substrate. Since 2003 they have also been producing oyster mushroom substrate. According to Henry, there were four producers of substrate for specialty mushrooms in the 1980s, but two dropped out around the turn of the century. Eurosubstrat is their only remaining competitor; both companies now supply both shiitake and oyster mushroom substrate. Lentin produces 8,000 tons of incubated substrate per year, around 5,000 tons of which is for oyster mushrooms and 3,000 for shiitake. They also produce another 400 tons of substrate for Buna-shimeji and other mushrooms. Strictly speaking, it is not an organic product. "I'm not a proponent of organic, because there's no such thing as a true organic product," Henry firmly believes. "There are a lot of opportunists and impostors out there. We don't use pesticides, but we are not officially an 'organic producer'." Various spawn varieties are used, from Mycelia (e.g. Pleurotus florida), Somycel (e.g. Pleurotus polinarius) and Amycel (e.g. Pleurotus ostreatus 3003) and Euromycel. "The varieties are often based on the same genetic footprint, but it is the way they are produced and packaged that makes the difference," says Henry. Wheat straw is used for the Pleurotus substrate, and a mixture of straw and oak sawdust for shiitake substrate. Calcium is added, along with additives such as maize and Promycel, a supplement based on soya and feather meal. The basic material is first chopped roughly and then finely, and moistened at the same time. "A slow process (1 ton per hour of dry material), but we get a fine, good quality result," says Henry. He uses second-hand machines wherever possible. Pasteurisation is done in a tunnel that can process 20-25 tons at a time, for 24 minutes at 60°C. After pasteurisation, the material is cooled down with filtered air overnight. Filling takes place as hygienically as possible, but not in a sterile environment. Everything is cleaned thoroughly after each cycle. In the summer the company has more problems in this area because everything has to be opened up on account of the high outdoor temperatures. The substrate is packed in bags with micro-perforations, using the same bags for shiitake and oyster mushrooms except that the perforations are slightly larger in the oyster mushroom bags. The substrate bags measure 25 by 50 cm and contain 12.8 kg of material. The substrate is incubated to order as far as possible, and any excess is stored in the specially built cool room. No heating is used during the process, although cooling is used. Lentin spends around €100,000 per year on electricity: French electricity is relatively cheap. Shiitake yields are around 17% after 16 weeks. Henry likes to keep the intermingled flushes short. All the data (production data, number, variety) is printed on the bags. It is cheaper to make pasteurised substrate than sterilised substrate. However, the company does sometimes suffer from green mould. The visitors were impressed by the incubation rooms and the product. "Our customers (growers) have too many mushrooms on the substrate half the year round, and >

Jean-Pierre Fouillet with a crate of Agrocybe aegerita.

Bruno Bianchi (centre right with black shirt) in discussion with Patrick Romanens (centre left) at Champi-Creuse.

> too few the other half," laughs Henry. The substrate blocks are packed in 7 layers of 10 blocks, 1 ton per pallet. Lentin supplies around 45 growers, 30 of which are in France. A third of their output - mainly shiitake substrate - is exported to the UK, Belgium, Germany, Switzerland and Spain. "Our customer base is stable; we don't advertise much. But sometimes we take part in activities like cooking demonstrations." Staffed by 14 people, the 7,000 m2 company (all under cover) is a relatively large employer in this thinly populated area. "We could expand physically, but our growth has reached a ceiling as the market is not growing that quickly," says Henry. We would hear that comment several more times on our trip. It was baking hot in Monétay, so we were only too happy to raise a glass with Henry and his wife.

Afterwards Henry took us to **Jean-Pierre Fouillet's** modest farm a few kilometres away, which grows Agrocybe aegerita on a 1,200 m2 growing area. Jean-Pierre Malie supplies restaurants in Lyon. "I have only been doing this for six months. Before that I was an electrician, but 'ceci est plus sympa'!" the grower smiles happily.

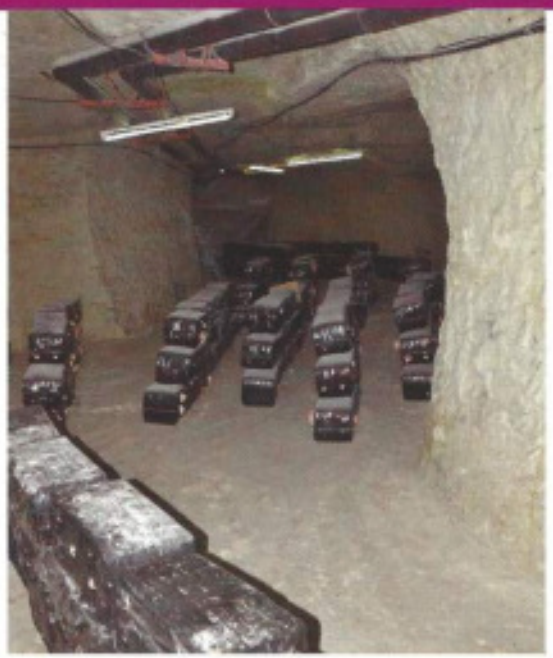
Oyster mushroom growing sheds at Champi-Creuse GAEC.

'The French don't cook anymore'

On 10 Mai we visited **Champi-Creuse GAEC** in St Yrieix La Montagne. Here brothers Bruno and Olivier Bianchi produce Pleurotus substrate which they use for growing their own mushrooms. Bruno set up Champi-Creuse in 1987, and was joined later by Olivier who focuses mainly on the substrate. The company has two production sites and a cellar which is only used in the summer. In the winter it is disinfected. The six staff produce 5 tons of oyster mushrooms per week. They prepare their substrate in a similar way to Lentin de la Buche. "The whole process is geared towards the stability of the substrate," says Bruno, who showed us round. "It is difficult to get hold of good wheat straw. We sometimes source it from Spain as well." French straw costs €80 per ton (compared with €140/ton in Italy, for example). They can chop 4 tons per hour. The material is not turned. Wheat straw is chopped and mixed with water. Then 10 kg per ton of soya supplement is added, followed by 10 kg per ton of gypsum. This is generally done on a Monday: on Wednesdays the material is put into the pasteurisation tunnel. They do not produce large volumes because all the substrate they make - 300 tons per year - is for their own use. "And anyway, who would we sell it to? There are hardly any producers left." According to Bruno, of the 250 oyster mushroom growers in France, there are only 10 left, three of whom have 60% of the French market covered. The total production volume is also falling. In fact, this applies to button mushrooms too: consumption is dropping. Why? "French people don't want to cook any more. In France there are attempts to get consumers to buy more local and/or French produce, but for many years the supermarkets have only ordered the cheapest produce." The sombre picture also applies to the wild mushroom market. "There used to be collection points here in the region, and we also used to sell wild varieties. But the Cep (Porcini) has been disappearing because Douglas fir is being planted instead of pine and grazing land is being farmed intensively. Now they are expensive and consumers are no longer interested in them." All his oyster mushroom varieties come from Mycelia. He switches variety every three to four months. He pasteurises the substrate for 24 hours at 64°C, then air-cools it for 2.5 hours. It is then inoculated and filled on a filling machine from the Italian company Alpi. Champi-Creuse uses 2 kg of spawn per ton of substrate. "We have even experimented with 1.5% spawn." In the Netherlands, 2-2.5% is normal. According to some of the visitors using less is possible, but this increases the risk of infection with competitor moulds. Bruno puts the total cost of incubated substrate at around €140 per ton, but it would be much higher if he were to buy in the substrate. "Transport is very expensive and the material is difficult to transport anyway. We have fetched it from Spain in the past, but the temperature of the substrate increased to 40° Celsius on the way here..." Oyster mushroom yields amount to around 25% in two flushes, comparable with Dutch averages. "In the first flush our yield is between 18 and 20%.

The price is low for six months of the year. It is high for the other six months, but then you really have to achieve that 20%." The price per kilogram is between €2 and €6. "The price fluctuates strongly, but €3 is the minimum the mushrooms need to fetch." The company has 10 growing rooms, not all of which are in use. Pickers cost around €10-€11 per hour. "But we aren't allowed to take on Romanian pickers. In France we have to stick closely to all the rules, and as an employer you have to pay through the nose for everything." Nonetheless, Bruno Bianchi is not dispirited. "I am happy with the way things are at the moment."

After a 295 km drive, we visited the chateau of Chenonceaux, after which we were given a fascinating guided tour of the extensive Caves Monmousseau wine cellars in Montrichard.



Substrate blocks with pink oyster mushrooms in the underworld of Champivabres.

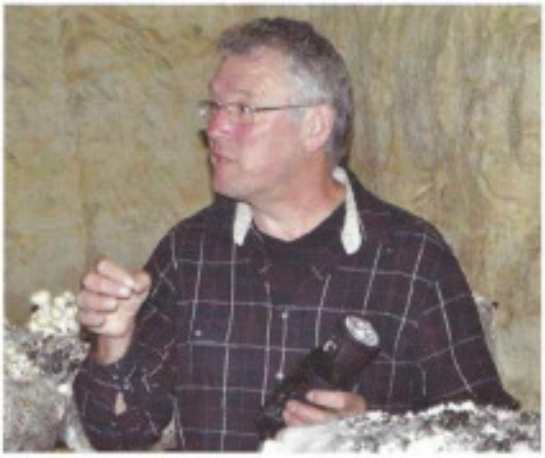
Into the caves

Even more caves were on the agenda on Wednesday, this time at **Champivabres SARL** in Montrichard. Philippe Tièche started growing mushrooms in 1990, and the company moved to their current cellar site in 2006. Here they grow between 10 and 12 varieties, depending on the season, including Pleurotus (70 tons per year), shiitake (45 tons), Pied Bleu (15 tons), Buna and some white button mushrooms. Every year they buy 800 tons of Pleurotus substrate, 600 tons of shiitake substrate and 400 tons of Pied Bleu substrate, mainly from Lentin de la Buche, and sometimes from Eurosubstrat. "'Changer' is a good old French tradition," winks Tièche. Champivabres employs 10 full-time people and some temporary staff as and when needed. They earn around €1200 net per month with a 35 hour working week. Tièche is not a member of an industry association. "There's absolutely no point in that." They buy in substrate for button mushrooms, Pied Bleu and Arvensis and spawn it in Montrichard. According to the grower, there is a severe shortage of horse manure in France. "In the past we would pay the breeders for their manure, but now they pay us to take it away as there are far fewer growers." The compost is therefore not expensive (€68 per tonne). "Mycelium costs us more!" After a short climb above the buildings we reached the only entrance to the cellars, which stretch over many kilometres and on three levels underground. They are owned privately, but not by Tièche: "We rent the whole system plus the buildings for €450 per month from a private owner for whom the cellars have great emotional value." The temperature is 12°C on average, but it can be raised or lowered by 3 degrees by drawing in air from outside with fans in 30-metre-high "chimney stacks". It doesn't matter how much it rains: thanks to the absorbing effect of the specific type of stone, there is never water in the corridors - not even condensation. But remarkably, they never have to wet the substrate: the blocks retain exactly the right amount of moisture all the time. "At most, we might 'wash' the outside of the blocks," says the grower. Almost the entire system is used for transporting and growing mushrooms. Different varieties grow together, "for a secure harvest and better, stable quality". They do not use Dimilin to control flies on Pied Bleu, but Tièche washes down the cellar walls with a special substance.

Average yields of Pied Bleu in France are between 5 and 6%. "This mushroom should really be able to yield the same amount as button mushrooms. With our Somycel variety we are above average, but we need to improve still further." He has more trouble growing Arvensis, even if the second flush looks good at the time of our visit. "These take almost as long to grow as Pied Bleu: six months, if conditions are right. He is happy with a yield of 10-12%. "As far as shiitake is concerned, I am growing too much, because prices are low and the substrate is of poor quality." Champivabres achieves yields of 20% for oyster mushrooms (cut stems). He has achieved good results with sporeless oyster mushrooms, but Lentin de la Buche does not supply it, and Tièche finds the variety quite expensive. Bunashimeji (a Mycelia variety) produces a good yield of 22%, and a price of €9 per kilo is no exception.

In the afternoon we went underground again in the Loire valley, this time more to the west, in the cellars of the **Musée du Champignon** in Saumur. The museum opened in 1978, and, uniquely, grows real mushrooms (about 12 tons fresh per year). So visitors can see the crops growing. On a tour of the cellars you can admire many different types of mushrooms, including non-edible ones and even the odd creepy one.

Continue on page 30 >



Philippe Tièche of Champivabres with the indispensable torch.

Specialty
Tour de France

Beautiful Pioppino grow in the Champivabres caves.

Continue from page 27 >

Then we embarked on a 450 km drive to Brittany, which we marked by opening some bottles from Caves Monmousseau. The 'Crémant de Loire' may not be called Champagne but it is a delicious sparkling wine that is just the job for a long coach trip.

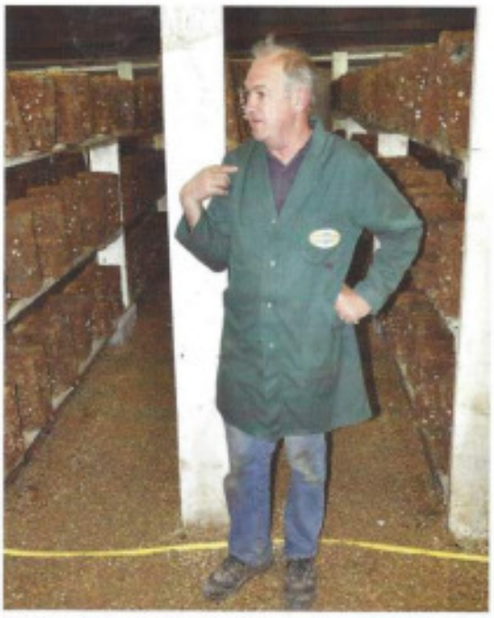
Shiitake is not a French word

At the north coast of Brittany, horticulture is a significant economic factor, thanks to the mild climate and fertile soil. From picturesque Morlaix we visited the research station **CATE**, Station Expérimentale Légumière et Horticulture on the heights of Vézendoquet, near Saint-Pol-de-Léon. Alain Kerbiriou gave us a very extensive guided tour of the facility, which conducts research into horticultural crops and flowers, but also for the entire French mushroom industry. Twenty researchers work here, five of whom are dedicated to mushroom research. CATE is financed predominantly by the French state (Chambre d'Agriculture) and SICA (see below). Mushroom producers contribute €40,000 per year to the research, the spawn producers Amycel and Sylvan also contribute, and a small surcharge is levied on each ton of substrate. The centre liaises closely with INRA (Institut National de la Recherche Agronomique), but does not have a contractual relationship with it. INRA has contributed some technical know-how but it is mainly engaged in button mushroom research. CATE is not collaborating with any foreign research institutes currently, but they do attend international conferences. "And we very much enjoy reading Mushroom Business," says Kerbiriou with a smile. The results of CATE's research, which is presented to growers once a year, are only available to affiliated members of CATE. They decide which projects to tackle at the annual general meeting. Kerbiriou has been working for CATE for 20 years and has been involved in mushroom research for the past 17, initially focusing on shiitake and later adding pleurotus, buna, pioppino and eryngii. He also advises growers.

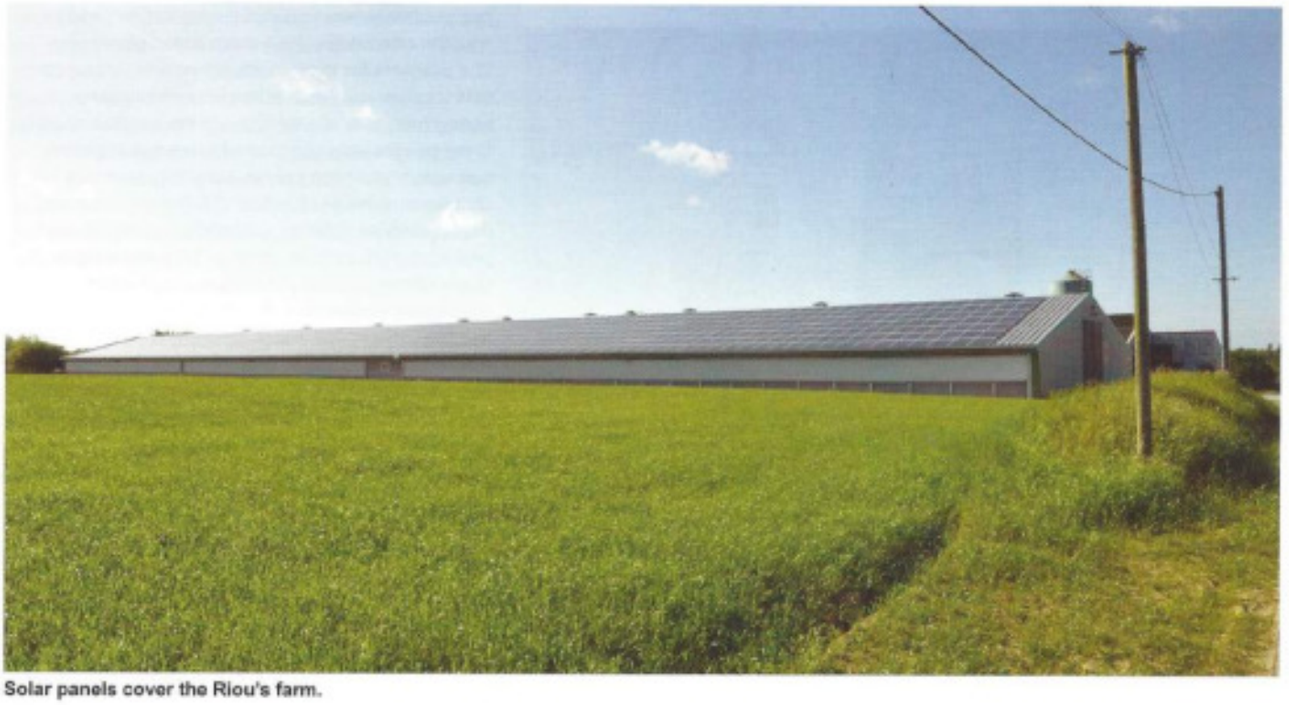
White Oyster mushroom at the CATE research farm near Saint-Pol.

After lunch at Saint-Pol we visited the **CATE mushroom research station** a little further on. Kerbiriou explains how the growing started: "In the early 1990s they wanted to start growing shiitake here. Chicory growers' buildings were standing empty between October and February, and they were looking for something else to grow. At the time, Bruno Henry was working with INRA to develop good shiitake substrate. Two commercial substrate producers started up after that, but their growing results were disappointing. The growers then took substrate preparation into their own hands, which delivered much better results." The experience from those years helped the growers on their way. Gradually the research station developed into a national facility which now also conducts research into other mushrooms besides shiitake. The research covers three themes: what varieties are suitable for which substrate; the composition of the substrate; and how herbicides and pesticides affect the substrate. About 25 times a year, light, non-organic straw is chopped, wetted and mixed on site. It is then pasteurised in a tunnel. Kerbiriou would rather keep the exact recipe of the very fine oak or chestnut sawdust and the soya and calcium additives as well as the pasteurisation temperatures to himself. But the main thing is that "the growers are happy with the composition," he says. The shiitake is left to develop in the blocks for five weeks (the centre has two special rooms for the purpose), and picking starts in 15 weeks. A yield of 20% is possible after 20 weeks.

Next we visited a large barn which originally housed turkeys. Now the barn is full of wooden shelves holding 70 tons of shiitake substrate in blocks. **Jean-Paul Riou,** who started out growing vegetables, has two production sites, including this one in Creach near Saint-Pol. The grower explains: "There is more air movement in the other one; it is minimal in this one, but the results are better. The shiitake are grown for between 12 and 20 weeks, with a yield of 20%. The blocks are not immersed in water or washed, but we do mist them. I am now getting 10% in the first flush. That is too much; I get a lot of small mushrooms, and it takes longer to regenerate for the second flush." The 40 tons of substrate per year mainly come from Bruno Henry, but also from Eurosubstrat. The producers compare their results with the substrates every day, partly so that they are "in a good position with the makers". "Bruno is cheaper, but he is further away." At the moment Riou is suffering from green blocks and flies. "I am only getting yields of 4% on the green ones." The wooden shelves do not look ideal, but Riou says that they are very cheap and easy to replace. "I also don't use any chemical pesticides. I have a lot of spiders at the moment, but they are useful - although the girls doing my picking might not agree!" He thinks that the biggest problem is the yield prices. "Prices are dropping all the time, and the market is shrinking. Five euros per kilo of shiitake does not cover our costs; 20 years ago we were still getting €8 per kilo (in the Netherlands you get €6.50 excluding packaging costs). In Brittany we are far away from everything and most of our produce is exported. The producers who don't export are close to the major towns and cities and can supply direct." Asked about the reason for the poor market situation, Riou replies: "Shiitake doesn't sound 'French'. What is more, there is no innovation going on in French cuisine with mushrooms, which is a problem for marketing and sales. Supermarkets don't want to invest in the product, and Chinese restaurants in France use imported dried mushrooms, not fresh French shiitake." All his shiitake is taken by SICA (Prince de Bretagne) (see below). "We send them everything, but if SICA does not sell it, we don't get any money for it." However, Riou is very happy >



Shiitake grower Jean-Paul Riou.



Solar panels cover the Riou's farm.

Patrick and **Solange Seité** in front of their shiitake farm at Tréflaouénan.

> with his own personal investment in solar panels on the roof. "The EU subsidy pot is empty now, but growers have been able to make use of it here and there." He gets as much as 60 eurocents per kilowatt for his surplus energy production, which by European standards is an absolute fortune!

Patrick and Solange Seité and their son grow shiitake in Tréflaouénan, south-east of Saint-Pol. We were welcomed by the friendly couple. Before 2005 they grew shallots, artichokes and cauliflowers. The farm recently had two new 285 square metre tunnels (sheds) built at a cost of €10,000. Each tunnel contains 17 tons of substrate. The ground is covered with sand, which retains the moisture well. They operate a shorter harvest cycle than Jean-Paul Riou. Refilling takes place every three to four weeks for a four-month cycle. The tunnels are easily ventilated by opening the doors. More so than Riou, they are happy with the substrate they buy from Eurosubstrat.

Jean Denis Crenn, president of SICA and shiitake grower (among other things).

The man from SICA

Jean Denis Crenn is a shiitake grower, president of CATE and president of **SICA Saint-Pol-de-Léon**, a non-profit-making fruit and vegetable co-operative in the Finistère region, the biggest of its kind in France. SICA has been representing the interests of around 1,100 agricultural companies for 50 years. They grow about 30 different crops, artichokes, tomatoes, broccoli, cauliflowers and shallots being the most important. The Global GAP-certified members supply 300,000 tons of vegetables per year worth €240 million, which are sold under the Prince de Bretagne brand. Mushrooms form a very small niche market within this range. "There are only seven producers, who supply about 150 tons of shiitake. The price is about €5 - €5.20 per kilo. There is also one affiliated pleurotus grower, but prices have been so low that they won't be delivering again until the autumn," says Crenn. SICA does not specifically promote shiitake. "The product piggy-backs on our general brand promotion, at Fruit Logistica, for example."

The future of shiitake growing does not look very bright. "Last year they had to destroy 4 tons, about €20,000 per producer, which wiped out their profit." According to Crenn, at €5 per kilo (which includes SICA's commission for packaging etc.) and a yield of 20%, growers can just about earn a living. Why isn't more marketing done? "SICA spends €3 million per year on promotion, but we cannot do product-specific advertising for a mere seven producers. The problem for mushroom growers is that no-one eats mushrooms north of the Loire. Mushroom eating has more of a tradition in the south, but even there people only buy white button mushrooms nowadays, and then only in cans. So promoting shiitake is quite a tall order." SICA is a member of the mushroom industry association, however, and participates in national promotional campaigns. Many of the products, which are supplied from 20 packaging companies, are offered at the SICA block auction in Saint-Pol, which we visited on 13 May. About 45 buyers battle it out there, or at three auction sites in the region, where you can bid remotely. But shiitake is not auctioned because of the lack of demand. A minimum price is agreed and if this is not reached, the product is destroyed. "It is a question of trust between the growers and the buyers who set the price. Naturally, the price is compared with the price level in the rest of Europe." So why is the price €1.50 lower than in the Netherlands, for example? "85% to 90% of our shiitake is exported, mainly to the Netherlands. So our customers are about 1,000 kilometres away, and it is the transport costs in particular that explain the lower price for

Prince de Bretagne mushrooms at SICA.

Shiitake blocks hanging from racks at Crenn's farm.

Breton growers," says Crenn. In the cold-storage room at SICA's modern facilities, we could see a few pallets of mushrooms. The stickers on the packaging not only reveal the origin, but also which substrate was used. A pallet of cut stems and lower quality mushrooms was ready for transportation. "They are going to Yves Rocher, the cosmetics manufacturer, for €1 per kilo," says Crenn.

Next we visited **Crenn's own farm**. On his 20 hectares he grows broccoli, cereals and shiitake and keeps pigs in addition to his management activities. "And I also have a wife and three children!" he laughs. With his partner and one other worker he produces 20 tons of shiitake per year on 50 tons of substrate, which is supplied by Lentin de la Buche. The substrate blocks hang on hooks, about 5-6 tons per shelf, in one room. These are phased, hung up five high. It takes three people 1.5 hours to take the blocks down from one rack. The air in the room is recirculated and humidified. Crenn uses as little cooling as possible so that the blocks do not dry out. His average yield is 20%.

That afternoon the coach driver took us to Roscoff on the coast, where we got a breath of fresh air, and in the evening we descended on Morlaix for the last time. A long night, lots of fun.

L'Arrivée

So when everyone at last climbed on board our coach, we headed for Paris, where a city tour by bus awaited us. We had dinner on the left bank and we stretched our legs along the Seine. A lovely end to an interesting but somewhat unsettling trip. The next HLP trip will be to Northern Italy. I hear Martin van de Vorle has already booked the gondolas and the restaurants. Count me in.

Dreve, Van de Vorle, Rademakers, Pleunis, Van den Elzen (l to r) at Trocadéro, Paris.