Samenwerkingsverband Regio Eindhoven

Champignon Kwekerij Gemert: upcycling spent mushroom compost

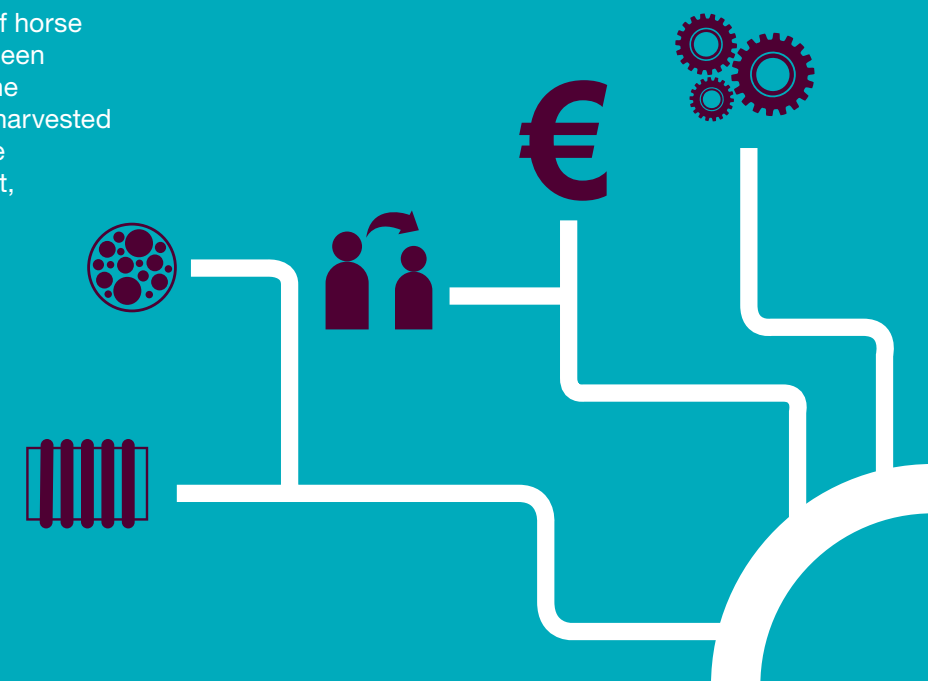
Development Plan Summary (Eindhoven, Netherlands)

Overview: A new process developed by the family-owned company Champignon Kwekerij Gemert (CKG) not only turns spent mushroom compost into Champost – a sought after soil improver – it has also saved 1.5 million cubic metres of natural gas and has seen a reduction in CO_2 emissions. This process led to CKG be awarded a prize of €10,000 from a Biobased Economy Competition run in the East Brabant region of the Netherlands through the BioenNW project. The idea for Champost arose from the company's need to find an economical and environmentally friendly method to dispose of its waste from its mushroom growing operations.

Project detail:

CKG is a mushroom growing farm situated on the edge of the Dutch village of Gemert in South-East Brabant. It produces approximately 1,000 kilograms of mushrooms each week which are used in the food canning and freezing industries. The mushroom growing process means that two of eight cells (each slightly less than half a football field in size or 1900 m^2) are filled with waste compost from this process as well as a layer of mulch every week.

Mushroom compost consists of a mixture of horse and chicken manure with straw which has been inoculated with mycelium and from which the mushrooms will grow. The mushrooms are harvested in two 'flights', the first after 16 days and the second after 24 days. After the second flight, the spent compost is removed and the cell is cleaned in preparation for the next four-week growing cycle. Each cell contains more than 160 tonnes of compost which means that CKG has to remove around 300-350 tonnes of spent compost every week. This waste stream is difficult to dispose of due to strict legislation rules for manure in the Netherlands. As a result, CKG was exporting the used compost to Germany at a cost of €12 per tonne. The company realised that the cost of transporting the compost could be substantially decreased by reducing the water content (currently 60-70%). CKG explored a new way of drying the compost and therefore reduced the water content from 70% to 40%. It enables the spent mushroom compost to be further composted to create Champost.



Environmental advantages

The heat generated during composting is used to dry the peat which can then be re-used, saving on the import of 1,000 tonnes of peat per year, mainly from Germany.

CO_2 Savings

CKG uses 300,000 cubic metres of natural gas every year to heat its mushroom growing cells. The heat generated during the production of Champost is 1.5 million cubic metres of natural gas – an equivalent saving of 3,000 tonnes of CO_2 per year. It also significantly reduces the need for transportation and associated costs.

Future developments

CKG is investigating uses for the residual heat (surplus to its own requirements) by connecting to a District Heat Network to serve a strawberry and asparagus growing farm nearby.

Champost has huge potential as a valuable soil improver and fertilizer due to its high organic matter content. It can also be used to improve soil fertility by increasing the availability of potassium, nitrogen and phosphate – a sought after commodity for local farmers and specialist growers. The quality of Champost can be improved with the addition of dried pig manure to the spent mushroom compost prior to composting. Researchers at the Green Campus in Helmond plan to study the effect of enriched Champost on plants, focussing specifically on the uptake of nutrients and the percentage of nutrients released into the soil and groundwater.

Engaging the public in its activities is a high priority for CKG and therefore its composting tunnels are located along the side of the main road leading to the local village so that the mushroom growing process is visible to the community. CKG will shortly embark on the construction of a new sustainable processing building which will be made of translucent polycarbonate so that the operation can be shown to the public. In this way CKG hopes to demonstrate that the conversion of waste into bio-based energy is useful, necessary, and above all, sustainable.

Encouraging an innovative biobased economy

In 2013, four organisations in East-Brabant in the Netherlands – Brabant Development Agency, Avans University of Applied Sciences, Agrifood Capital North East Brabant and City Region of Eindhoven (SRE) – worked together to run a competition to search for new applications for waste and residues from agriculture and manufacturing processes. Champignon Kwekerij Gemert, owned and run by the Van den Boomen family, successfully won the competition and is now receiving expert support to help it develop its innovative idea.

This development plan has been produced through BioenNW – a €7.9m strategic initiative of the European Union INTERREG IVB North West Europe Programme (2011-2015). BioenNW is led by the European Bioenergy Research Institute at Aston University, UK and sees 11 partners working together to deliver small-scale bioenergy schemes throughout North West Europe.

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Report issued in October 2014

BioenNW
Delivering Local Bioenergy to NW Europe

Investing in Opportunities
This project has received European Regional Development Funding through INTERREG IVB.
INTERREG IVB