Innovative system uses bamboo to treat wastewater

October 18 2013

Credit: AI-generated image (disclaimer)

The quality of water is a worldwide concern. Now more than ever, competent and responsible management of water resources, and especially wastewater treatment, is needed to reduce the impact of human activities on the environment and to ensure that future generations have a safe and plentiful water supply.

The EU project BRITER-WATER ('Market replication of bamboo remediation of food industry effluent grey water for re-use') looked at developing and demonstrating an innovative wastewater treatment system using bamboo.

Frédéric Panfili of France's Phytorem and the project's scientific manager says the system looks like nothing more than a bamboo plantation, easily blending in with the surrounding landscape. The system is designed to treat 'grey water' - wastewater that does not contain sewage or toxic chemicals.

The food industry generates high volumes of grey water, he says, in which the main pollutant is organic matter. "From an environmental point of view, the discharge of water containing high amounts of organic matter in aquatic media can lead to excess oxygen consumption, favouring the proliferation of anoxic micro-organisms, causing bad odours and, in extreme cases, the death of fish."

The team implemented a full-scale wastewater treatment pilot plant (1500 square metres), using bamboo to treat food industry wastewater. The use of plants to remove, contain or degrade environmental contaminants in water, soil or air is known as phytoremediation.

"Our treatment system was implemented for the Délifruits factory near Valence, in France, which produces soft drinks," says Panfili. "The system is in fact a vegetation filter; in this kind of treatment, the wastewater is sent through the soil of a plantation. In our case, we used sandy filtration materials in place of soil, but the principle is the same - wastewater passes through the soil or the filtration media, where naturally occurring micro-organisms degrade the organic matter."

"We chose bamboo because it has a very dense root system. It is also a fast-growing plant, among the most productive terrestrial plants in the

world, and it is a rustic plant - it can resist many environmental stresses, including too little or too much water, or extremely low temperatures. In addition, as compared to other vegetal biomass, the bamboo biomass has many interesting properties, especially high heating value. So the biomass produced during the wastewater treatment can be used locally as a boiler fuel, to heat administrative buildings or schools, for example."

The BRITER-WATER treatment system is now being marketed as the Bambou-Assainissement filter. Through the project, this new wastewater treatment was presented at European and international scale, which has improved the visibility of the SMEs implied in the project, especially of Phytorem.

Currently, the market replication of the Bambou-Assainissement filter is under way - four other bamboo treatment plants have been built since the project was completed - and Phytorem is involved in another European project dealing with wastewater management (WATER4CROPS).

More information: en.phytorem.com/The-Bambou-Assainissement-R

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