

LAND APPLICATION SYSTEMS FOR URBAN WASTEWATER TREATMENT OF SMALL BUILT-UP AREAS

DESCRIPTION

What is a Land Application Systems?

A Land Application Systems is a plot area, sized according to the influent to be treated, which has forests installed and is irrigated with wastewater. The residual water partially evaporates and the rest is taken up by the roots of trees and filtered through the soil.

Before application to the soil, it is desirable to introduce a primary treatment system, to remove coarse solids, sand, grease and solids. But these systems provide more than just simple purification, because while treating the water, we are also producing biomass with high economic value.



scientific & technical offer

Unlike conventional waste water treatment systems, no external energy input is needed, so the running and maintenance costs are greatly reduced. Furthermore, it is a robust technology and the operation is simple. This technology is therefore ideal for treatment of urban waste water from small towns, with strong flow oscillations.

Land Application Systems: a suitable method for waste water treatment in small towns

The scaling of conventional treatment systems for the purification of effluents from small towns is not effective, as due to their high operating and maintenance costs they end up being abandoned. Land Application Systems have been shown to be a very suitable treatment system, both for their low operating costs, easy maintenance and high performance.

Unlike other technologies, Land Application Systems can be managed without external energy input, so the costs are reduced. In addition, their maintenance is similar to other agricultural tasks, so there is no need for specialist personnel (difficult to find in isolated municipalities).

High-quality biomass production is another aspect to be highlighted, as it constitutes an important reduction in the final costs of the system.

Researchers are currently working on ways of increasing the amount of biomass generated per cubic metre treated and optimizing nutrient removal.

The use of this technology with high density planting, up to 10,000 stems per hectare, greatly reduces the plantation area. This will produce greater consumption of nutrients and thus an improved water treatment. Moreover, as the biomass generated will be withdrawn in short cycles (less than 3 years), maximum vegetative growth will take place.

Land Application Systems are considered a reliable, robust and low maintenance technology. This, together with the moderate cost of implementation, makes Land Application Systems a very competitive technology for treating wastewater from small towns or isolated areas.

Moreover, the production of biomass, either high quality (cycles greater than 10 years) or intensively (cutting cycles 2 to 3 years), generates a by-product of commercial value that reduces the final running and maintenance costs. Additionally, the added value generated by the capture of CO₂ in the biomass growth processes may constitute an input to be considered in the case of larger installations.

Recharging with the treated surplus is another big advantage, which can enable reuse in periods of great demand.

Finally, the environmental impact caused by this type of treatment is minimal, and in some cases positive, as it generates a forest ecosystem of great natural and scenic value.

IMDEA WATER SOLUTIONS

Why can you rely on IMDEA-Water for Land Application Systems installation?

Most current Land Application Systems are not properly designed, as they fail to consider climatic, geologic and hydrogeological factors. Moreover, their management is not optimum due to the random nature of the control.

In IMDEA-WATER we have developed a three-step method for Land Application Systems design that considers physical environment and socio-economic as well as quality and technological factors. This way, we can provide a purifying process adapted to real needs. The control and management can be carried out by ICTs.

We have already developed two patents to improve our green filters design: a self-winding gate for flood management and a continuous nitrate sensor. We have also developed software to gauge and operate them.

In IMDEA-WATER we also provide a project management team to ensure correct implementation of our Land Application Systems.

What about an already installed Land Application Systems?

At IMDEA-WATER we offer our technical advice service on how to run an already installed Land Application Systems using our new methodology.

IMPLEMENTATION SECTOR

- Councils, community of municipalities, provincial councils, rural development associations
- Architecture studios
- Water Companies and Wastewater Treatment Plants in small populations
- Water resource managers
- Associations or industries producing biomass or wood
- Any company interested in developing water supply and water remediation projects in developing countries

ADDITIONAL INFORMATION

<http://www.consolider-tragua.com/1280.htm>

<http://www2.uah.es/filtrosverdes/>

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TECHNOLOGY KEYWORDS

Land Application Systems, Water Treatment, Recharge, Biomass.

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