An integrated approach for biogas production with agricultural waste

Reporting

Project Information

AGROBIOGAS

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Coordinated by
DANSK LANDBRUGSRADGIVNING LANDCENTRET

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Final Report Summary - AGROBIOGAS (An integrated approach for biogas production with agricultural waste)

The overall objective of the AGROBIOGAS project was to enhance the European development of farm-based anaerobic digestion plants utilising agricultural waste materials for production of renewable energy. Anaerobic digestion is a sustainable way of handling agricultural waste materials and the environment benefits in several ways. Treatment of organic wastes in biogas plants results in increased nutrient uptake by the crops when the digested material is applied to the fields. Thus, anaerobic digestion is a way of reducing nutrient losses to surface and ground waters. Production of renewable energy is a growing source of income for European farmers and investment in biogas production can be a relevant business opportunity for farmers throughout Europe.
The project was effectively structured into the following activities:
- Increase the efficiency of AD with agricultural waste in co-digestion with other organic residues
- To gather the scattered information about biogas from local projects and make it accessible to farmers and farmers associations, ensuring a successful performance of current and future AD plants.
- Reduce the uncontrolled disposal of AD sludge by the development of recommendations for the use of it as bio-fertiliser.
- Train the IAGs in utilisation of the helpdesk components, the co-fermentation substrate database and in applying the bio-fertiliser recommendations.

The AGROBIOGAS consortium has developed a number of different decision supporting tools to be used in the planning phase by farmers considering investing in a biogas plant. However, the tools developed can also be used by owners of existing plants to optimise the process and economy of the biogas production.

AGROBIOGAS substrate database and process simulation toolkit
The core element of the AGROBIOGAS decision supporting tools is a standalone software application comprising a substrate database and a simulation tool. Through the database the user gets access to a wide range of qualitative information on the 28 different substrates included. For instance, the user can find information on the availability of a given substrate in the local area together with a number of biological, chemical and physical characteristics. The database also contains comprehensive data from the batch and continuous lab-scale experiments carried out in the AGROBIOGAS project.

Investment decision tool
The AGROBIOGAS substrate database and the simulation tool are linked to an investment decision tool to facilitate a first economic evaluation of a given biogas project. Based on the specific substrate mix selected (amounts and costs) and taking into account the capital and operating costs together with the local price of the sales products (electricity and / or heat) the internal rate of return of the project and the payback period are calculated. This is useful information for European farmers considering engaging in biogas production.

Operational guidelines and recommendations for utilisation of AD sludge as bio-fertiliser
The AGROBIOGAS decision supporting tools also include a set of operational guidelines developed as part of the project (AGROBIOGAS guideline 1). The operational guidelines include a general introduction to anaerobic digestion, a troubleshooting section to be used by biogas plant operators and advice on how to undertake effective process control.

Training workshops throughout Europe
In order to secure effective dissemination of the information generated and the decision supporting tools developed in the project a two-step training approach was used. On a two-day training workshop for project partners the decision supporting tools including manuals and guidelines were presented and evaluated. Based on feedback given the different tools and the corresponding training material (power point-presentations, etc.) was updated and translated.

The European AD helpdesk network
All together the AGROBIOGAS decision supporting tools constitute the basis of the European agricultural helpdesk network of advice for investors in farm based biogas plants (the European AD helpdesk). The European AD helpdesk gives access to information and advice through a number of biogas experts located in eight different European countries. Name and contact details of the local biogas experts are found on the European AD helpdesk website which is available on the following address: http://www.adhelpdesk.eu. The website is available in seven different languages.

Dissemination of project results
In addition to dissemination via the European AD helpdesk network and via the 16 local training workshops the AGROBIOGAS project and it’s results have been presented throughout Europe by project partners in articles, on websites, on conferences and fairs.

During the three-year project period there has been a growing interest for anaerobic digestion among politicians, farmer associations and researchers throughout Europe. The growing interest is closely linked to the growing concern for climate changes and the challenge of identifying alternative sources of energy to fossil fuels. The AGROBIOGAS project has contributed with new knowledge and data as well as some concrete decision supporting tools to be used by future and existing owners of biogas plants. The project has also contributed to raise the awareness of anaerobic digestion in several European countries.

Related documents

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