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# A model-based assessment of the potential role of irrigated cropland for biogas production in Europe

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Abstract. For the European Union, the increasing use of renewable energy sources is an important instrument to reduce its greenhouse gas emissions and to achieve greater independency from energy imports. Here, agriculture has the chance to become an important contributor by the cultivation of bio-energy crops. In this paper, the potential role of irrigated cropland for the cultivation of silage maize for biogas production is analyzed on the European level. A methodology is developed to identify suitable locations for maize cultivation and to evaluate their performance in respect of the amount of irrigation water and land needed for energy production. For this purpose, GIS analysis techniques are combined with simulation results from the process-based vegetation model LPJmL for maize yields and irrigation water requirements. The generated information can serve as input for the development of European-scale bio-energy policies and for further analysis of the water footprint and energy balance of bio-energy systems.

Full Article in PDF (PDF, 461 KB)

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