

## عنوان مقاله:

Potential for biogas production from the anaerobic digestion of chicken droppings in Morocco

## محل انتشار:

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## خلاصه مقاله:

**Purpose** The chicken droppings can have a negative impact on the environment and public health. In this work, we are interested in treating this waste by anaerobic digestion and we estimate the national potential of green energy produced by anaerobic digestion and map the areas that need digesters to improve national poultry farming. **Methods** The anaerobic digestion of this waste is performed in three steps. In the first step, the chicken droppings are placed in a laboratory digester without pretreatment. In the second step, the droppings are placed in an industrial digester without pretreatment. In the third step, a methanogenic inoculum is incubated with the chicken droppings in a batch digester. The biogas production is measured by manometer, and the composition of this biogas is analyzed by gas chromatography. **Results** The chicken droppings without pretreatment generated a small amount of biogas (11.24 and 20 m<sup>3</sup> for one ton of waste fresh) in the laboratory and in the prototype digester. After pretreatment (heating and grinding), this waste produced a large quantity of biogas, on the order 230,58 ml/gCOD, equivalent to 64.4 m<sup>3</sup> for one ton of fresh waste, with 60.2 % methane, 38.8 % carbon dioxide and 0 % hydrogen. This biogas production has a lower heating value of 385 kWh for one ton of chicken droppings. Based on these results, our country has high potential for green energy (200 GWh) by transforming the droppings of broilers by anaerobic digestion. **Conclusion** In Morocco, the installation of biogas digesters in poultry units is an effective technique for this industry, because this waste is a potential energy source.

## کلمات کلیدی:

Chicken droppings Anaerobic digestion Green energy Biogas Pretreatment Inoculums

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