Faculty of Agronomy and Veterinary Medicine

Small farms and biogas production in Brazil

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Overview

- A systematic literature review was performed to identify gaps and research opportunities about biogas production and Brazilian small farms.
- Studies developed between 2012 and 2017 were recovered and evaluated.

Introduction

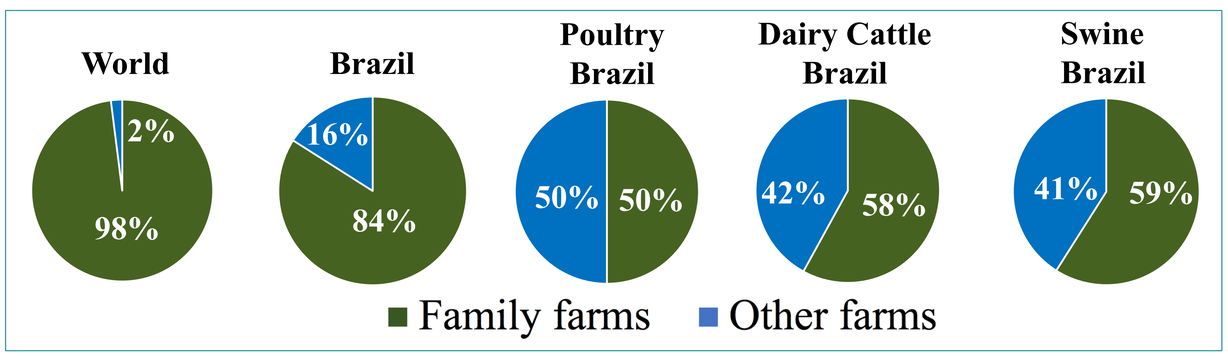


Figure 1. Distribution of family farms in the world and in Brazil [Graeub; 2016, IBGE, 2006].

- Biomass waste can contribute to rural development through mitigating environmental impacts and adding value to agribusiness chains.

Methods

- Search on the Web of Science database for academic papers;
- Keywords: biogas or biomethane or "green gas" or greengas or "digestated gas" or "renewable natural gas" and translations in Portuguese (biogás, biometano, "gás verde", GNVerde or "GN Verde");
- Vantage Point® (text mining).

Results

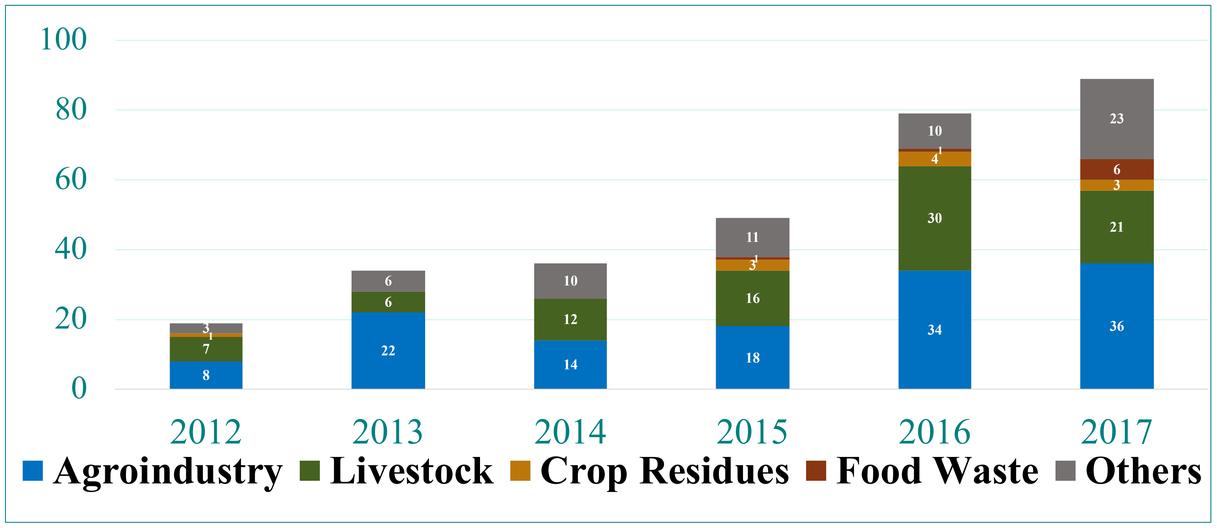


Figure 2. Publication by kind of substrates to produce biogas (2012-2017).

- 306 academic papers were recovered;
- Main approaches to environmental (19.3%) and economic assessment (11.1%), pre-treatment (8.8%), co-digestion (10.8%), microalgae (7.2%), biomethane (12.4%) and biohydrogen (7.5%);
- Although there were found a small amount of publications (4.2%), approaches between Brazilian small farms and biogas production were relationated with alternative forms of business organization (AFBO), such as anaerobic bio-digestion/energy generation complexes (ABD/EG) and agroenergy condominiums.

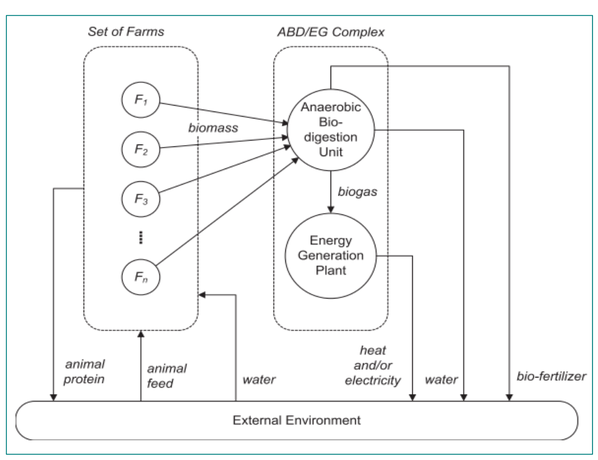


Figure 3. Sketch of an anaerobic bio-digestion/energy generation (ABD/EG) [Mayerle; Figueiredo, 2016].

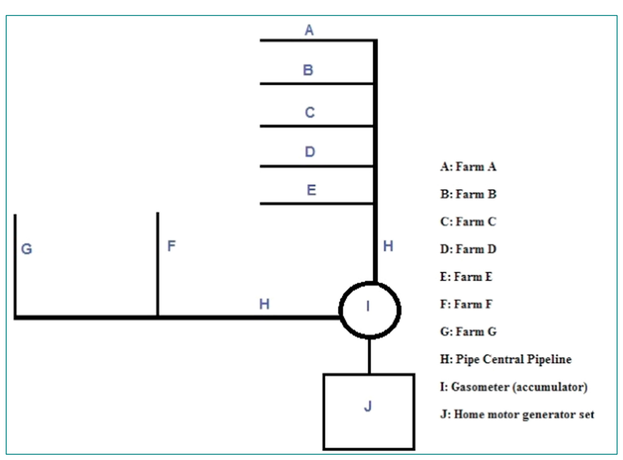


Figure 4. Sketch of an agroenergy condominium [Almeida *et al.*, 2017].

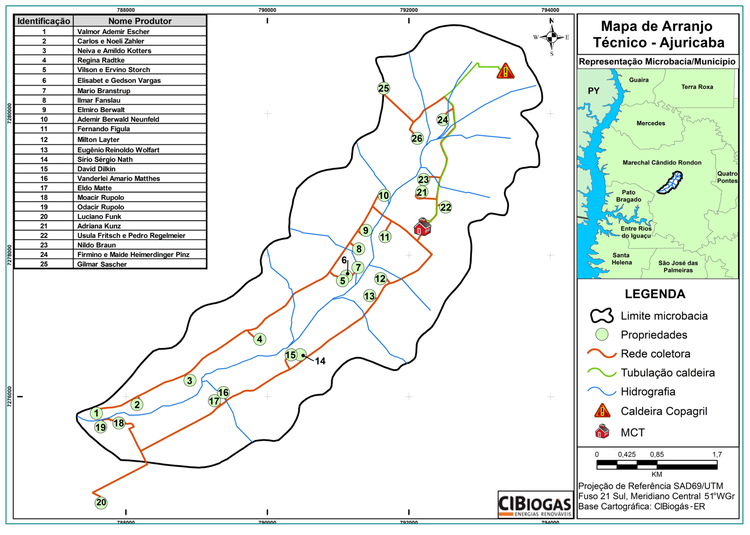


Figure 5. Map of the Agroenergy Condominium for Family Agriculture Ajuricaba [CIBiogás, 2018].

Conclusions

- Policies and incentives are necessary;
- AFBO can favor the biogas production by Brazilian small farms;
- More studies about environmental and socioeconomics concerns of AFBO are necessary.

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