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Sustainability Futures: Challenges and Opportunities Towards a More Sustainable World

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Practical aspects of sustainability and its relationship with the valorization of coffee grounds in a Brazilian educational institution

Isael Colonna Ribeiro; Jacqueline Rogéria Bringhenti; Poliana Daré Zampirolli Pires; Adriana Marcia Nicolau Korres

OBJECTIVES OF THE PAPER

This study reports practical aspects of sustainability focusing on valorization of coffee grounds in a Brazilian technical and higher education institution.

https://www.agazeta.com.br/concursos/inscricoes-abertas-para-17-vagas-de-professor-substituto-no-ifes-0321

Fonte: New Atlas (2019)

APPROACH USED

1. Selection of locations and definition of coffee grounds collection routes
2. Public Awareness
3. Collection protocol
4. Coffee grounds drying protocol
5. Implementation of Composting
6. Quantification of the yield of the compounds obtained

APPROACH USED

1 Selection of locations and definition of coffee grounds collection routes

A - Corporate Environment
B - Educational Institution

2 Public Awareness

APPROACH USED

3 Collection protocol

Collection of coffee preparation residues

4 Coffee grounds drying protocol

Drying coffee residues

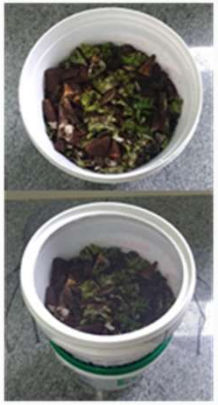
APPROACH USED

5 Implementation of Composting

5 treatments X 5 repetitions

20%, 40%, 60%, 80% and 100%

(coffee grounds)



6 Quantification of the yield of the compost obtained

KEY RESULTS

Study area	Collected waste (Kg)	People involved
Corporate Environment	87.1	205
Educational Institution	22.5	92
Total	**109.6**	**297**

Treatment	Mass reduction (g)	Average yield (%)
T1 (100%)	9.0	99.0
T2 (20%)	**819.0**	**11.9**
T3 (40%)	651.0	30.0
T4 (60%)	428.0	53.9
T5 (80%)	205.0	77.9

- ✓ 87.1 kg and 22.5 kg of coffee preparation residues were collected in the corporate environment and in the educational institution, respectively;
- ✓ Involving almost 300 people;
- ✓ Despite presenting the lowest yield, the T2 treatment was the one that demonstrated the best chemical and physical parameters according to Normative Instruction N°. 25 of July 23, 2009 (Brazilian Ministry of Agriculture, Livestock and Supply) for organic compounds.

KEY RESULTS

Study area	Collected waste (Kg)	People involved	Total number of employees	Total mass of waste (t)	Volume diverted from the landfill (m^3)
Corporate Environment	87.1	205	**10.300**	**93.12**	**124.68**
Educational Institution	22.56	92	**445**	**1.90**	**2.64**
Total	109.6	297	**10.745**	**95.02**	**127.32**

- ✓ The institutional environments studied have together around 10,700 employees;
- ✓ The consumption of coffee in these two environments results in an annual generation of coffee grounds estimated at 95.02 t/year;
- ✓ If these 95.02 t of coffee grounds were diverted annually from landfills, they would contribute to a reduction of 127.32 m^3 in relation to the sending of waste to these locations.

KEY RESULTS

Study area	Indicator	T2 (20%)
Corporate Environment	Compound produced (t)	16.7 t
	Monetary value (R$)	106,019.00 R$
Educational Institution	Compound produced (t)	0.34 t
	Monetary value (R$)	2,164.90 R$

Total
Organic compost mass: **17.04 t**
Monetary value: **108,183.90 R$**

- ✓ This amount of residues from the preparation of coffee, mixed with other organic residues generated in the institutions in the proportion of 20%, can produce **17.04 t/year** of organic compost, with an estimated monetary value of around **108.20** thousand reais.

Fonte: New Atlas (2019)

MAIN CONCLUSIONS

The use of organic compost, which can be produced in both environments, could generate a significant reduction in costs due to the independence of fertilizers and other chemical additives;

Composting when developed on the spot involves reducing the costs of managing organic waste, especially collection, transportation and final disposal, in addition to minimizing environmental impacts such as reducing the volume of waste sent to landfills and dumps;

The decentralized production of organic compost aligns harmoniously with objectives 11 and 13 of the UN Agenda 2030, stimulating the practice of local actions focused on a global thinking based on the social, economic, and environmental pillars.

CONTACT DETAILS OF THE AUTHORS

Isael Colonna Ribeiro, M. Sc. - Federal Institute of Education, Science and Technology of Espirito Santo

isaelcolonna@gmail.com

Jacqueline Rogéria Bringhenti, D. Sc. - Federal Institute of Education, Science and Technology of Espirito Santo

E-mail: jacquelineb@ifes.edu.br

Poliana Daré Zampirolli Pires, D. Sc. - Federal Institute of Education, Science and Technology of Espirito Santo

E-mail: poliana.pires@ifes.edu.br

Adriana Marcia Nicolau Korres, D. Sc. - Federal Institute of Education, Science and Technology of Espirito Santo

E-mail: adrianak@ifes.edu.br