

Evaluation of The Energy Potential of Agricultural Waste In West Africa from Three Biomasses of Interest In Benin

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Abstract

The present report deals with the evaluation of abundant agricultural residues in West Africa based on criteria. These criteria are essentially: the availability of the resource based on a statistical study extended over a period of ten (10) years, the rate of competitive uses of the resource, the critical rate of actual availability and the potential actually available. This study extends the field of knowledge on the physicochemical characteristics of agricultural biomass in countries where the economy is strongly dominated by agriculture. Maize residues come first, followed by cotton, sorghum, rice residues and lastly millet residues. Corn stalks and cobs followed by cotton and millet stems proved to be abundant in the balance of agricultural residues in Benin. This study shows that the biomass resource is more concentrated in the North (Alibori, Atacora, Borgou and Donga), a little less in the center and the South. Similarly, the energy potential of maize residues (stalks and cobs) is very important in the energy balance of the valorization of agricultural biomass and has its source in North Benin where the potential is very remarkable. Added to this is the energy potential of cotton stems. Thus, it is possible to mobilize 458 MW from maize stalks, 205 MW from maize stalks, 6 MW from millet stalks and 62 MW from cotton stalks.

Speaker Publications:

1. Adamson DT, de Blanc PC, Farhat SK, Newell CJ. Implications of matrix diffusion on 1,4-dioxane persistence at contaminated groundwater sites. The Science of the Total Environment. 562: 98-107. PMID 27096631 DOI: 10.1016/j.scitotenv.2016.03.211
2. Mcguire TM, Adamson DT, Burcham MS, Bedient PB, Newell CJ, Evaluation of Long-Term Performance and Sustained Treatment at Enhanced Anaerobic Bioremediation Sites Groundwater Monitoring and Remediation. DOI: 10.1111/gwmr.12151
3. Adamson DT, Anderson RH, Mahendra S, Newell CJ, Evidence of 1,4-dioxane attenuation at groundwater sites contaminated with chlorinated solvents and 1,4-dioxane. Environmental Science & Technology. 49: 6510-8. PMID 25970261 DOI: 10.1021/acs.est.5b00964
4. Truex MJ, Vermeul VR, Adamson DT, Oostrom M, Zhong L, Mackley RD, Fritz BG, Horner JA, Johnson TC, Thomle JN, Newcomer DR, Johnson CD, Rysz M, Wietsma TW, Newell CJ, Field test of enhanced remedial amendment delivery using a shear-thinning fluid Groundwater Monitoring and Remediation. DOI: 10.1111/gwmr.12101

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Biography:

David G. F. ADAMON is a specialist in biomass energy recovery, consultant in energy efficiency and renewable energies, teacher researcher at the National Institute of Industrial Technology in the department of energy engineering. He has contributed to the development of several political documents as an expert in Benin and has to his credit several articles.