

The Potential of Agricultural Vegetative Waste Management System in Smart Agriculture

L.Y. Lim¹, C.P.C. Bong¹, C.T. Lee^{1,2}, J.S. Lim¹, J.J. Klemeš³

¹Faculty of Chemical and Energy Engineering, Universiti Teknologi Malaysia (UTM), Johor, 81100, Malaysia

²Innovation Centre in Agritechology for Advanced Bioprocessing (ICA), Universiti Teknologi Malaysia – Pagoh, Jalan Edu Hub UTM 2,, Hub Pendidikan Tinggi Pagoh, 84600 Pagoh, Johor Malaysia

³Sustainable Process Integration Laboratory- SPIL, NETME Centre, Faculty of Mechanical Engineering, Brno University of Technology- VUT Brno, Technická 2896/2, 61600 Brno, Czech Republic.

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Presenting author email: nitecass@gmail.com

Vegetative residues from agricultural sector are one of the major waste contributors worldwide. The generated agricultural vegetative wastes (AVW) are commonly disposed in the farm, especially in developing country. This can be a great concern to the environment. The continually decomposition of AVW cause the direct release of greenhouse gases (GHG) and soil water pollution. Introducing an agricultural vegetative waste management system (AVWMS) is crucial to solve the issues. The management of AVW is neither a new concept nor a new technology. Many waste management technologies are available including anaerobic digestion, composting, pyrolysis and incineration. Notably composting and anaerobic digestion have been widely applied for managing AVW. Smart Agriculture (SA), which focuses on the optimum production and resource utilising, could provide solutions to effectively manage AVW. Current AVWMS, involving waste collection and transportation to the treatment site, is costly and time-consuming that leads to significant GHG emission. As a major wastes output in agricultural sector, AVW can be a precious resource for SA. Integrating AVWMS into SA proposes a waste-to-resources loop that could increase resource re-utilisation in the agricultural sector. It also improves overall on-site productivity of the farmland. This review aims to provide an overview of the current AVWMS and its integration into the SA system. The review focuses on the types of AVW, technology applied, efficiency and potential resources recovery.