

Integrated smart building for sustainable agriculture as a solution to food security and future land constraints

Priyambodo^{1a}, Mahfud Sidik^{1b}, Kishy Dhea Herlanda¹, Eva Selviana², and Putri Septiarini³

¹*Biology Department, FMIPA Universitas Lampung.*

Jl. Prof. Dr. Ir. Sumantri Brojonegoro No.1, Rajabasa, Bandar Lampung, Lampung 35141, Indonesia

²*Mathematics Department, FMIPA Universitas Lampung.*

Jl. Prof. Dr. Ir. Sumantri Brojonegoro No.1, Rajabasa, Bandar Lampung, Lampung 35141, Indonesia

³*Chemistry Education, FKIP Universitas Lampung.*

Jl. Prof. Dr. Ir. Sumantri Brojonegoro No.1, Rajabasa, Bandar Lampung, Lampung 35141, Indonesia

^{a)} *Corresponding Author: priyambodo@fmipa.unila.ac.id,*

^{b)} *Sidikmahfud05@gmail.com,*

Abstract. Indonesia forests are the largest tropical forests in the world with an area of +137,090,468.18 ha. However, deforestation is a problem that has not been solved until now. Deforestation is triggered by the growing needs of basic foodstuffs. The National Statistics Agency (2020) noted, in the period 2010-2020 Indonesia experienced an average population growth of 1.25% every year. As the population increases, agricultural land in Indonesia is decreasing while the need for food will increase. Various efforts in maintaining food security in Indonesia have been made but have not resulted in significant changes. Therefore, we initiated a building design that we hope to use in the future. This building has a length of 44 m and a width of 40 m with the number of enlargement rooms of cattle and goats each is 2 rooms and has a consecutive area of the room is 24 x 14 m, 14 x 8 m. The second and third floors there is a rice enlargement room with a total area of 1,344 m². Total hydroponic space reaches 6.72 m². In one year this building can give results of 24 tons of rice.