

The Production of Reinforced Insulation Bricks out of the Concentration of *Ganoderma lucidum* Fungal Inoculums and Cement Paste

Authors : Jovie Esquivias Nicolas, Ron Aldrin Lontoc Austria, Crisabelle Belleza Bautista, Mariane Chiho Espinosa Bundalian, Owwen Kervy Del Rosario Castillo, Mary Angelyn Mercado Dela Cruz, Heinrich Theraja Recana De Luna, Chriscell Gipanao Eustaquio, Desiree Laine Lauz Gilbas, Jordan Ignacio Legaspi, Larah Denise David Madrid, Charles Linelle Malapote Mendoza, Hazel Maxine Manalad Reyes, Carl Justine Nabora Saberdo, Claire Mae Rendon Santos

Abstract : In response to the global race in discovering the next advanced sustainable material that will reduce our ecological footprint, the researchers aimed to create a masonry unit which is competent in physical edifices and other constructional facets. From different proven researches, mycelium has been concluded that when dried can be used as a robust and waterproof building material that can be grown into explicit forms, thus reducing the processing requirements. Hypothesizing inclusive measures to attest fungi's impressive structural qualities and absorbency, the researchers projected to perform comparative analyses in creating mycelium bricks from mushroom spores of *G. lucidum*. Three treatments were intended to classify the most ideal concentration of clay and substrate fixings. The substrate bags fixed with 30% clay and 70% mixings indicated highest numerical frequencies in terms of full occupation of fungal mycelia. Subsequently, sorted parts of white portions from the treatment were settled in a thermoplastic mold and burnt. Three proportional concentrations of cultivated substrate and cement were also prioritized to gather results of variation focused on the weights of the bricks in the Water Absorption Test and Durability Test. Fungal inoculums with solutions of cement showed small to moderate amounts of decrease and increase in load. This proves that the treatments did not show any significant difference when it comes to strength, efficiency and absorption capacity. Each of the concentration is equally valid and could be used in supporting the worldwide demands of creating numerous bricks while also taking into consideration the recovery of our nature.

Keywords : mycelium, fungi, fungal mycelia, durability test, water absorption test

Conference Title : ICAETSD 2020 : International Conference on Advanced Energy Technologies for Sustainable Development

Conference Location : Bangkok, Thailand

Conference Dates : January 16-17, 2020