

**PROCESSING OF FIBER BASED BIOFOAM CUPS USING  
SUGARCANE BAGASSE AND CASSAVA STARCH  
AS PLANT CONTAINER FOR  
HYDROPONIC SYSTEM**

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## ABSTRACT

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The study was designed to produce a fiber-based biofoam cup from different mixtures of sugarcane bagasse and cassava starch, an alternative to styrofoam cups as plant containers in a hydroponics set-up. The study was carried out with 3 treatments replicated thrice. The mixture was added with a constant amount of polyvinyl alcohol, glycerol and magnesium stearate by weight basis, and then coated with paraffin wax. The data for density, water absorption, solubility as well as the performance of the biocups in terms of plant growth (no. of leaves), plant mortality and pH level when used as plant containers in Kratky method were gathered through a completely randomized design and analyzed using the analysis of variance (ANOVA) and the least significant difference (LSD) test at 1% and 5% levels. Only the treatment yielding the best results in terms of quality were evaluated for hydroponic application.

Statically, the results indicate that the density and water absorption of the cups from the three treatments significantly varied with a P-value of 0.0055 and 0.0127 respectively. However, no significant difference was observed for the solubility of the biocups among the treatments with a P-value of 0.0827. Based on the results, Treatment 3 exhibited the highest density and lowest values for solubility and water absorption among the treatments and was selected with the commercially available Styrofoam cups as plant containers in Kratky method hydroponics set-up. For the duration of the observation period, all pechay plants survived resulting in a mortality rate of 0%. Furthermore, there was a significant difference in the number of leaves, as indicated by the P-value of 0.0059 while pH level was found to be lower (6.38) for Treatment 3 than the control (6.40). The results suggest that biofoam cups are not best to be used as plant container in hydroponics, but due to its higher density, low water absorption and solubility it implies potential suitability for other planting materials, such as for seedlings.

*Keywords: fiber based, biofoam cups, sugarcane baggase, cassava starch, hydroponic system*