Effect of empty fruit brunch reinforcement in polybutylenesuccinate/modifed tapioca starch blend for agricultural mulch films

ABSTRACT

In this study, it focused on empty fruit brunch (EFB) fibres reinforcement in polybutylene succinate (PBS) with modified tapioca starch by using hot press technique for the use of agricultural mulch film. Mechanical, morphological and thermal properties were studied. Mechanical analysis showed decreased in values of modulus strength for both tensile and fexural testing for fibres insertion. Higher EFB fibre contents in films resulted lower mechanical properties due to poor fibre wetting from insufficient matrix. This has also found evident in SEM micrograph, showing poor interfacial bonding. Water vapour permeability (WVP) shows as higher hydrophilic EFB fibre reinforcement contents, the rate of WVP also increase. Besides this, little or no significant changes on thermal properties for composite films. This is because high thermal stability PBS polymer show its superior thermal properties dominantly. Even though EFB fibres insertion into PBS/tapioca starch biocomposite films have found lower mechanical properties. It successfully reduced the cost of mulch film production without significant changes of thermal performances.