

**Characterization, morphology, and biodegradation of bioplastic fertilizer (BpF) composites made of poly(butylene succinate) blended with oil palm biomass and fertilizer**

**ABSTRACT**

Poly(butylene succinate) (PBS) is a versatile biodegradable polymer that can be processed into slow-release bioplastic fertilizer (BpF) composites using twin screw extruder extrusion method, with controlled formulation and temperature. In this study, slow-release BpF composites were created by blending NPK fertilizer with biodegradable plastic composites and oil palm biomass. Temperature processing was done at 125°C to 145°C for 365 min using twin screw extruder. Its thermal degradation occurred initially at 263.44°C and reached maximum at 300.73°C. In biodegradation test, the weight losses of PBS/NPKC1 and PBS/NPKC2 were about 60% while the weight losses of PBS/EFB/NPKC1 and PBS/EFB/NPKC2 were 72.68% and 73.09%, respectively. It was observed under scanning electron microscope that PB1 and PB2 showed more homogeneous adhesion and better wetting of PBS.

**Keyword:** Poly(butylene succinate); Bioplastic fertilizer (BpF); Oil palm biomass; Fertilizer