Perekat untuk pembuatan pelet pupuk organik dari residu proses digestasi anaerobik lumpur biologi industri kertas

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Abstrak

The residue from anaerobic digestion of paper mill biological sludge has the potency to be used as organic fertilizer. Physically, organic fertilizer in pellet form has smaller volume and easily stored and transported. The aim of this study is to obtain the appropriate adhesive to make fertilizer pellets from the residue from anaerobic digestion of paper mill biological sludge. The experiment were performed with two variable treatments which are the types of adhesive (sago flour, cassava starch, molasses) and the adhesive doses (0.5%, 1.0%, and 1.5%) with respectively 3 replications. The physical properties of resulting pellets were tested including yield, density, water holding capacity, and durability. The effect of pellets on plant germination and growth was also done using tomato seed. The results explained that generally, the pellets meet minimum requirements of organic fertilizers and soil conditioner according to Indonesian National Standard (SNI 7847:2012) unless Zn as micro nutrient and Regulation of the Minister of Agriculture Number 70/2011 unless water content. The pelletization of organic fertilizer to the size of 3-5 mm can be done by adding the best adhesive material, namely cassava starch 1% with the physical properties of the pellets including a yield of 99.56%, density of 1.84 g/mL, water holding capacity of 65.53%, and durability of 99.65-99.84%, but organic fertilizer pellets (with sago flour as adhesive) at a dose of 0.5 g/50 g media is the best for tomato germination and growth.