

INTISARI

Limbah domestik merupakan salah satu tantangan nyata dalam kehidupan di Indonesia. Dalam Limbah Domestik biasanya terkandung 85% protein, 25% karbohidrat, dan 10% lemak, serta sisanya zat yang terkadang mengandung material anorganik. Tingginya kandungan protein ini, membuat limbah domestik berpotensi untuk diproses secara biokonversi dengan menggunakan *larva Hermetia Illucens*. Larva *Hermetia Illucens* memiliki kandungan nutrisi protein yang mencapai 45-50% dan lemak yang mencapai 24-30%, sehingga dapat dijadikan sumber pakan bernutrisi tinggi.

Penelitian ini mempelajari produksi *larva Hermetia Illucens* melalui proses biokonversi pada limbah nasi, daun singkong dan campuran nasi sayur (1:1), dengan memvariasikan *feed ratio* sebesar 60,80,100 mg/larva/hari. Larva *Hermetia Illucens* yang digunakan 200ekor. Masa penelitian dilakukan selama 21 hari, dengan menganalisa *substrate consumption*, *waste reduction index*, berat larva, proksimat media pakan dan larva, serta menyusun pemodelan pertumbuhan, *survival rate* dan *waste reduction* larva *Hermetia Illucens*

Hasil penelitian ini menunjukkan bahwa limbah yang paling optimal memproduksi larva dalam proses ini adalah limbah campuran nasi dengan *feed ratio* 60mg/larva/hari dengan berat total 10,00 gram. Reduksi limbah paling optimal pada proses biokonversi dapat dilihat dari nilai *substrate consumption* sebesar 65,82% dan *waste reduction index* 18,02%. Persamaan laju pertumbuhan larva dalam penelitian ini yaitu $dm/dt = -0,116 m^{0,5}$, dimana m merupakan potential growth ($m_{max}-m$) dengan m_{max} sebesar 8,6083 gram dan R^2 sebesar 0,939, sedangkan persamaan *survival rate* dihasilkan $\frac{dN}{dt} = \alpha N^{0,5}$ dimana N merupakan *potential survive* ($N_{max}-N$) dan persamaan *waste reduction* larva dapat diketahui dengan persamaan $\frac{dW}{dM} = \alpha W^1$ dimana W merupakan *potential reduction* ($W_{max}-W$).

Kata kunci : limbah domestik;biokonversi; larva *hermetia illucens*; daun singkong; nasi; campuran nasi sayur; pemodelan pertumbuhan

ABSTRACT

*Domestic waste is one of the real challenges in life in Indonesia. In Domestic Waste usually contain 85% protein, 25% carbohydrate, and 10% fat, and the remaining substance which sometimes contain inorganic material. The high content of this protein, making domestic waste potential to be processed in bioconversion using the *Hermetia Illucens* larvae. *Hermetia Illucens* larva has a protein content of 45-50% and fat that reaches 24-30%, so it can be a source of high nutrient feed.*

*This study studied the production of *Hermetia Illucens* larvae through bioconversion process on rice waste, cassava leaf and mixed vegetable rice (1: 1), by varying feed ratio of 60,80,100 mg / larva / day. *Hermetia Illucens* larvae used were 200. The research period was conducted for 21 days, by analyzing substrate consumption, waste reduction index, larvae weight, proximate feed and larvae media, and arranging growth modeling, survival rate and waste reduction of larvae of *Hermetia Illucens**

The results of this study indicate that the most optimal waste producing larvae in this process is rice waste with feed ratio 60mg /larva /day with a total larvae weight of 10.00 grams. The most optimal waste reduction in the bioconversion process can be seen from the substrate consumption of 65.82% and the waste reduction index of 18.02%. The growth equation of larvae in this research is $dm / dt = -0,116\Delta m^{0,5}$, where Δm is potential growth ($m_{max}-m$) with m_{max} equal to 8,6083 gram and R^2 equal to 0,939. whereas survival rate equation resulted $\frac{dN}{dt} = \alpha N^{0,5}$ where ΔN is a potential survive ($N_{max}-N$) and larval waste reduction equation can be known by the equation $\frac{dW}{dM} = \alpha W^1$ where ΔW is the potential reduction ($W_{max}-W$).

Keywords: domestic waste, bioconversion; larvae hermetia illucens; cassava leaves; rice; mixed vegetable rice; growth modeling