

**PENGARUH PERBANDINGAN SISA SAYURAN DAN KULIT BUAH
TERHADAP REDUKSI SAMPAH ORGANIK OLEH MAGGOT *BLACK
SOLDIER FLY (HERMETIA ILLUCENS)* DI RSUD KABUPATEN
TEMANGGUNG**

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ABSTRAK

Latar Belakang: Sampah organik merupakan salah satu jenis limbah yang dapat menimbulkan pencemaran lingkungan apabila tidak dikelola dengan baik. Instalasi Gizi RSUD Kabupaten Temanggung menghasilkan sampah organik sebesar 15,9 kg/hari yang didominasi sisa sayuran dan kulit buah. Kedua jenis sampah tersebut berpotensi dimanfaatkan melalui proses biokonversi menggunakan maggot *Black Soldier Fly (Hermetia illucens)*. Namun, tingginya kadar air dan perbedaan komposisi sisa sayuran dan kulit buah memengaruhi kemampuan reduksi sampah organik dan biomassa maggot. Penelitian dilakukan untuk mengetahui pengaruh perbandingan sisa sayuran dan kulit buah (70:30, 80:20, 90:10) terhadap persentase reduksi sampah organik dan biomassa maggot.

Tujuan: Mengetahui pengaruh perbandingan sisa sayuran dan kulit buah terhadap persentase reduksi sampah organik dan biomassa maggot *Black Soldier Fly* di RSUD Kabupaten Temanggung.

Metode: Penelitian ini merupakan penelitian eksperimen dengan desain *pretest-posttest without control group*. Penelitian dilakukan selama 7 hari terdiri atas 3 perbandingan dengan 9 kali pengulangan.

Hasil: Rata-rata persentase reduksi sampah organik tertinggi diperoleh pada perlakuan 70:30 sebesar 79,04%, perlakuan 80:20 sebesar 73,93%, dan perlakuan 90:10 sebesar 70,95%. Biomassa akhir maggot tertinggi pada perlakuan 70:30. Hasil uji *Kruskal-Wallis* menunjukkan terdapat pengaruh yang signifikan perbandingan sisa sayuran dan kulit buah terhadap persentase reduksi sampah organik ($p < 0,001$).

Kesimpulan: Perbandingan sisa sayuran dan kulit buah berpengaruh signifikan terhadap reduksi sampah organik oleh maggot *Black Soldier Fly*. Komposisi 70:30 merupakan perlakuan paling efektif yang menghasilkan persentase reduksi sampah organik dan biomassa maggot tertinggi.

Kata Kunci: Maggot *Black Soldier Fly*, sampah organik, sisa sayuran, kulit buah, reduksi sampah, biomassa.

**THE EFFECT OF THE RATIO OF VEGETABLE WASTE AND FRUIT
PEELS ON THE REDUCTION OF ORGANIC WASTE BY BLACK SOLDIER
FLY (*HERMETIA ILLUCENS*) MAGGOTS AT TEMANGGUNG REGENCY
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ABSTRACT

Background: Organic waste can cause environmental pollution if not properly managed. The Nutrition Installation of RSUD Kabupaten Temanggung generates approximately 15.9 kg of organic waste per day, predominantly consisting of vegetable residues and fruit peels. These materials have the potential to be utilized through bioconversion using Black Soldier Fly (*Hermetia illucens*) larvae. However, their high moisture content and differences in composition may affect the efficiency of waste reduction and larval biomass production.

Objective: To determine the effect of different proportions of vegetable residues and fruit peels on the percentage of organic waste reduction and the biomass of Black Soldier Fly larvae at RSUD Kabupaten Temanggung.

Methods: This study employed an experimental design using a pretest-posttest without a control group. The experiment was conducted for 7 days using 3 substrate proportions (70:30, 80:20, 90:10) with 9 replications for each treatment.

Results: The highest average organic waste reduction was observed in the 70:30 treatment (79.04%), followed by the 80:20 treatment (73.93%) and the 90:10 treatment (70.95%). The highest larval biomass was also obtained in the 70:30 treatment. The Kruskal-Wallis test indicated a significant effect of substrate composition on the percentage of organic waste reduction ($p < 0.001$).

Conclusion: The proportion of vegetable residues and fruit peels significantly affected organic waste reduction by Black Soldier Fly larvae. The 70:30 composition was the most effective treatment, resulting in the highest waste reduction and larval biomass.

Keywords: Black Soldier Fly larvae, organic waste, vegetable residues, fruit peels, waste reduction, biomass.