Turning Waste into Feed: Black Soldier Fly for Sustainable Poultry Production

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Introduction

The poultry industry faces growing challenges in securing sustainable feed sources. Conventional ingredients require vast land and water resources, worsening environmental issues. Black Soldier Fly (*Hermetia illucens*) offer a sustainable, high-protein alternative animal feed.

It is a non-pest insect valued for waste recycling and animal feed. Adults (15–20 mm long) are shiny black with clear wings, while larvae (up to 27 mm) are grey to black and cylindrical. Native to the Americas but now widespread in warm regions, BSF thrive in moist, organic-rich environments. Larvae feed on decomposing matter, whereas adults live 4–8 days and do not feed.

Objectives

- To demonstrate the potential of BSF as a sustainable poultry feed ingredient.
- To promote BSF farming for a circular and climate-smart feed system in Ethiopia.

Measurements: Feed intake, body weight changes, egg production.

Methodology

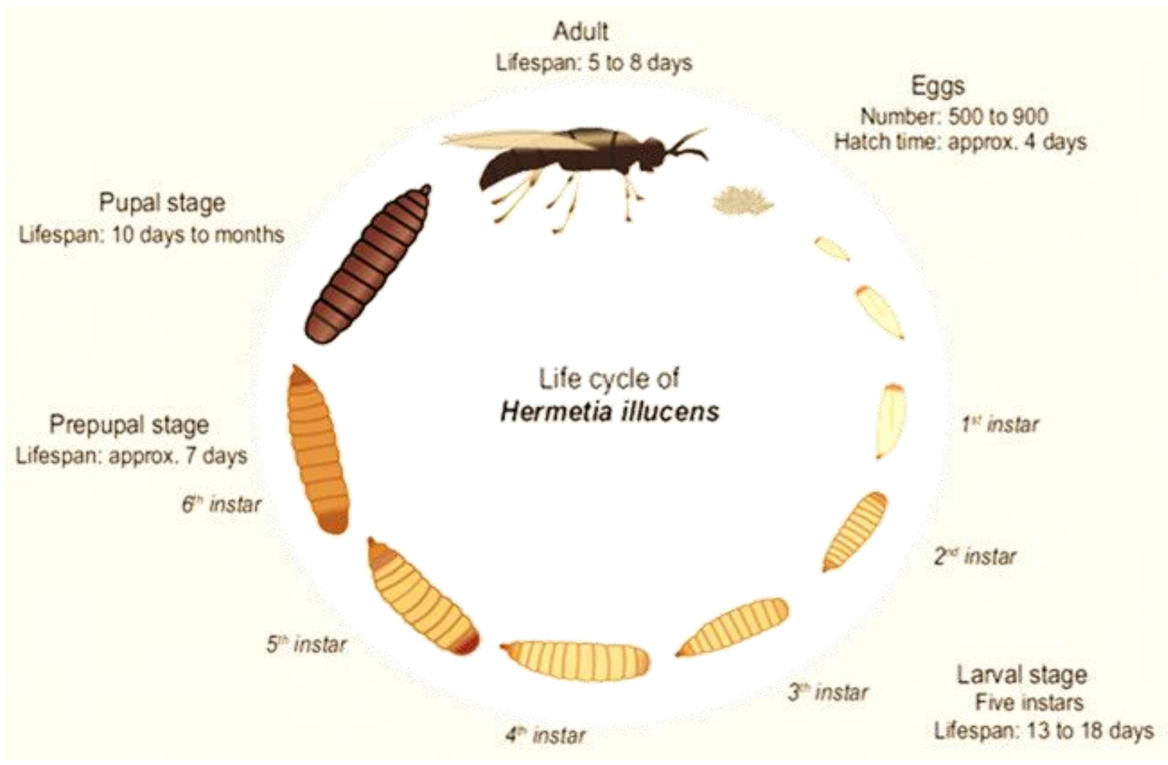
Table 1. Nutritional contents of BSFLM

Nutrients	**%**
Dry matter	90.00
Crude protein	44.00
Crude fiber	7.00
Ether extract	46.12
Total ash	7.00
ME (kcal/kg DM)	4700
Calcium	6.50
Phosphorus	0.80

Table 2. Experimental layout

Treatment	**Level**	**Replication**			**Design**
T 1	0%	R1	R2	R3	CRD
T 2	3%	R1	R2	R3	
T 3	6%	R1	R2	R3	
T 4	9%	R1	R2	R3	

T: treatments; **R**: replications, level of BSFLM inclusion



Results:

Table 3.Performance of hens fed different levels of BSFLM

Parameters	**Treatments**					
	T1	**T2**	**T3**	**T4**	**SEM**	**P-value**
Feed intake (g/b/day)	104.4	99.9	92.8	109.4	2.44	0.07
Initial BW (g)	1539.4	1472.8	1508.3	1535.0	22.1	0.76
Final BW (g)	1606.7	1552.2	1606.7	1701.1	98.24	0.35
BW change (g)	67.2	79.4	98.3	166.1	23.3	0.50
Egg weight (g)	58.0^{ab}	55.5^{b}	56.5^{ab}	58.9^{a}	0.49	0.03
HDEP (%)	70.0^{a}	60.3^{a}	47.0^{b}	62.3^{a}	2.77	0.00
HHEP (%)	70.0^{a}	58.3^{ab}	47.0^{b}	62.3^{a}	2.82	0.00
FCR in egg mass	2.16^{a}	2.52^{ab}	2.95^{b}	2.53^{ab}	0.11	0.03
Haugh Unit Score	89.5^{b}	102.1^{a}	95.0^{ab}	97.9^{ab}	1.61	0.01

Conclusion:- BSF is a promising, sustainable feed resource supporting waste recycling and feed self-sufficiency in Ethiopia.

Recommendations: Promote household BSF farming, Strengthen research-policy-private partnerships, Train farmers and youth on BSF farming.

Duration
Project Coordinator
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