Tropentag, September 16-18, 2026, hybrid conference

"Towards multi-functional agro-ecosystems
promoting climate resilient futures"

Growth, carcass characteristics and serum biochemistry of growing pigs fed black soldier fly larvae-based diet

Ibinabo Ilaboya[1], Moses Omatsuli[2], David Bamigboye[3], Ogbemudia Ebhonu[4], Christopher Osobase[5], Razak Abdulazeez[6], Johnson Oyedeji[7], Rapheal Okuna[8]

[1]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[2]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[3]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[4]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[5]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[6]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[7]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*
[8]*Benson Idahosa University, Animal Science and Animal Technology, Nigeria*

Abstract

This study evaluated the effects of black soldier fly larvae meal (BSFLM) on growth performance, carcass characteristics and serum biochemical indices of growing pigs. Thirty pigs were randomly allotted to five dietary treatments in a Completely Randomised Design, with three replicates per treatment and two pigs per replicate, over a 42-day feeding period. Soybean meal was replaced with BSFLM at 0 %, 25 %, 50 %, 75 % and 100 % inclusion levels. Blood samples were analysed for total protein, cholesterol, albumin, globulin, glucose, Alanine Aminotransferase and Aspartate Aminotransferase, while growth and carcass traits were measured and all data subjected to analysis of variance. Initial body weights were similar among treatments. Body weight gain declined only at 100 % inclusion ($p < 0.05$), whereas pigs fed 25 and 75 % replacement performed comparably to the control. Feed intake decreased as BSFLM increased, but feed conversion ratio remained unchanged, indicating efficient utilisation of the diets. Carcass traits, including live weight, dressing percentage and major cuts, were unaffected, although dressed weight and some organ weights (heart, kidney, and stomach) varied significantly ($p < 0.05$) across treatments. Serum biochemical results showed that 50%BSFLM improved lipid metabolism and reduced liver enzyme activity without affecting total protein or glucose, indicating stable metabolic and hepatic function. However, higher inclusion levels reduced albumin and globulin concentrations, suggesting decreased immune protein synthesis. All values remained within physiological limits, confirming the safety of BSFLM. Partial replacement of soybean meal, particularly around 50 % inclusion, maintained growth performance, carcass quality and health status, while complete substitution remained safe but nutritionally less advantageous.

Keywords: Black soldier fly larvae, carcass characteristics, growth performance, piglets, serum biochemistry

Contact Address: Ibinabo Ilaboya, Benson Idahosa University, Animal Science and Animal Technology, 16a Osagiede Uzzi off Aerodrome Close, 300102 Benin, Nigeria, e-mail: iilaboya@biu.edu.ng