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Growth performance, carcass characteristics and cost indices of weaner-piglets fed black soldier fly frass meal-diets

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Abstract

An animal byproduct that has great potential in feed replacement is frass, a waste product obtained by growing black soldier fly larvae (BSFL) on various substrates. In addition, frass is the leftover material from the production of BSFL, which may include exoskeleton shedding, processed larvae and leftover dietary substrate and larvae excretions. In addition to its nutritional value, frass contains chitin, lauric acid and antimicrobial peptides that may improve the overall health of young pigs This study evaluated the effect of black soldier fly larvae frass meal (BSFFM) on growth performance, carcass characteristics and cost indices of grower pigs. A total of 30 grower pigs were individually weighed and allotted to five treatments, with three replicates per treatment and two pigs per replicate, in a completely randomised design. The study lasted 42 days, during which five diets were formulated such that BSFFM substituted soybean meal at 0 % (control, T1), 25 % (T2), 50 % (T3), 75 % (T4) and 100 % (T5). All data were subjected to analysis of variance using GenStat software, and means were separated using Duncan Multiple Range Test (DMRT). Results showed that dietary treatment did not significantly ($p > 0.05$) affect initial body weight (BW) or feed intake. However, final BW, body weight gain (BWG) and feed conversion ratio (FCR) were significantly ($p < 0.05$) improved in T1, T2 T3 and T4 when compared to pigs fed T5. Carcass characteristics, including live weight, dressed weight, dressing percentage, cut-parts and organ weights, were comparable among pigs fed the control and the substituted diets, but were significantly ($p < 0.05$) reduced at 100 % BSFFM inclusion. Cost indices indicated reduced feed cost parameters with increasing BSFFM inclusion. Gross profit was highest (N8252) in T2 and significantly ($p < 0.05$) lower in T5. In conclusion black soldier fly larvae frass meal can be included in grower pig diets at moderate levels without adverse effects on growth performance or carcass quality, while offering potential economic benefits. However, 100 % substitution of conventional feed ingredients with BSFFM is not recommended due to its negative effects.

Keywords: Black soldier fly frass, carcass characteristics, cost indices, growth performance, piglets

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