

Effect of using insect larvae meal as a complete protein source on quality and productivity characteristics of laying hens

ABSTRACT

This study was conducted to evaluate the effect of black soldier fly larvae (BSFL) as a source of protein in layer diets on product performance, egg quality, hatchability, fertility, and sensory characteristics of eggs. The BSFL contained a high percentage of protein (559.9 g kg⁻¹), metabolizable energy (696.3 kcal kg⁻¹), crude fat (18.6 g kg⁻¹), and dry matter (178 g kg⁻¹) and a good balance of amino acids. A total of 54 Arabic strain hens at nine months of age were mixed with nine cocks at 12 months old; all were divided into three treatments. The diets were formulated based on three levels of energy-to-protein ratio: 155, 140, and 170. The BSFL meal was added at 0, 50, and 10 g kg⁻¹ respectively. The results showed that feed intake, weight gain, Haugh unit, and hatchability were not affected by dietary treatments with BSFL. However, there was significant improvement in hen day egg production and hen house egg production due to dietary treatments of BSFL. Also, feed conversion ratio, egg weight, shell thickness, shell weight, egg yolk color, fertility, and egg mass were affected by dietary treatments. In addition, a significant improvement was observed in appearance, texture, taste, and acceptance of eggs of hens fed BSFL at 50 g kg⁻¹. The odor was not affected by dietary treatments. Black soldier fly larvae can be a good source of protein in layer diets.

Keyword: Black soldier fly larvae; Energy to protein ratio; Laying hen