

A Comparison of Proximate Composition and Water Stability of Three Selected Shrimp Feeds Used in Sri Lanka

U.P.K. EPA^{1*}, M.J.S. WIJEYARATNE¹ and S.S. DE SILVA²

¹Department of Zoology, University of Kelaniya 11600 Sri Lanka

²School of Ecology and Environment, Deakin University, P.O. Box 423
Warrnambool, Australia 3280

Abstract

Feed is considered as the major expense in shrimp farming, accounting for about 50 – 60% of the total variable costs. Feed is also a major input affecting water quality and subsequently effluent quality in shrimp culture ponds. Therefore, it is important to evaluate feeds to enhance the economical and environmental sustainability of the industry. Two imported feeds from Thailand (B1) and Taiwan (B2) and one local (B3) feed used in shrimp farms were analysed for moisture, protein, lipid, ash, and energy. Pellet stability tests were conducted in salinity adjusted sea water (20 ppt) in plastic tanks (100 L) with flow (treatment) and with out flow (control). Three feed brands used in this study are available in five different sizes corresponding to stock size. Feed sizes were not significantly different ($p > 0.05$) among different feeds. There was a significant ($p < 0.05$) linear relationship between length and diameter in feeds B1 and B2 ($y = 2.78x - 0.9$ and $y = 3.2x - 1.32$, respectively) but not in the local feed. The levels of moisture, crude protein, crude lipid, ash and energy content in shrimp feeds varied from 6.1 – 11.4%, 37.4 – 46.2%, 4.5 – 11.1%, 11.0 – 13.4% and 16.6 – 24.8 kJg^{-1} , respectively. Moisture content was significantly higher ($p < 0.05$) in B3 than B1 and B2 with means of 10.3, 7.9 and 7.7%, respectively. Mean energy content in B3 (17.5 kJg^{-1}) was significantly lower ($p > 0.05$) than B1 (22.8) and B2 (21.3 kJg^{-1}).

Water stability of feeds with flow (treatment) and the control (with out flow) were not significantly different ($p > 0.05$) among feeds. Mean dry matter, protein and ash retention in crumbles after four hours of immersion varied from 81.2 – 84.3%, 59.8 – 63.8% and 64.5 – 66.2%, respectively. Same parameters in the pellets ranged from 79.1 – 83.1%, 53.7 – 65.0% and 68.4 – 71.5%, respectively. Significant differences in water stability between crumble and pellet feeds were observed in all the feed brands except protein in the imported feeds and ash in the local feed. Dry matter retention of pellets in B3 was significantly lower

* Corresponding author. +94 11 2914479; Fax: +94 11 2914479
E-mail address: epa@kln.ac.lk