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Effect of different substrates biomass and harvesting methodology on the quantity of harvested maggot meal in fish feeding

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Conventional animal feeds ingredients are mostly imported into the country, these are becoming too expensive, very scarce and beyond the reach of poor fish and livestock farmers. In fish farming, the relatively high cost of fish meal and feeds, it's increased foreign exchange imports and low investment in local production with the attendant decrease in the supply demand gap of fish and fish products consumption had led to the need for the development of maggots meal as a fish meal analogues using the larval stage of housefly (*Musca domestica*). The maggot meal is an ideal replacement for the fish meal feeding problems based on cost implication/ effectiveness, crude protein content, availability and amino acid profile. In this study, three major substrates used were broiler manure (BM), cow rumen content (CRC) and pig manure (PM). The two harvesting methodologies included the hand tongs method (using tong picking instrument) and water floatation method. Maggotry of dimension 1.2 m2×5 cm was prepared and filled to a depth of 5 cm with each of the substrates separately. After ovipositing on the second day, mature larvae were harvested on the sixth day of ovipositing. The results showed that the quantity of harvested fish meal analogue of magmeal was significantly highest (p<0.05) in BM with a value of 437.32±0.15 g compared to 416.58±0.17 g and 394.52±0.14 g in the CRC and PM substrates, respectively. The method of harvesting showed that tong picking was significantly highest (p<0.05) though more laborious with a value of 489.72±0.23 g compared to 402.13±0.11 g in tong picking method.

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Reconstitution process optimization of producing rice-like kernels from different cereal grains

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An optimization procedure for producing reconstituted rice-like grains through cooking the mixture of (*Coix lacryma-jobi* L.), broken milled rice (*Oryza sativa* L.) and white corn (*Zea mays* L.) swelled with water to produce a partially gelatinized mixture then extruded to form a rice-shaped kernel and lastly dried. The study aims specifically to determine the operating parameters that can be controlled and modeled; as well as determine the optimum combination for preparing rice-like grains. The ratio of adlai: broken rice: white corn mixture (50%:45%:5%, 50%:35%:15%, 50%:25%:25%); mixture moisture content (25%, 35%, 45%); and gelatinization time (40 min., 60 min., 80 min.) were set and controlled for this study. The optimum combination established were 50%:36%:14% adlai-broken rice-corn mixture, 33% mixture moisture content and 58 min. gelatinization time. Verification test showed that predicted and experimental values were reasonably close. The percentage difference for physical properties such as: Moisture content (6%), bulk density (8%), whiteness index (6%); mechanical properties that includes: Breaking force (20%), stress (20%), maximum strain (18%) and bio-yield point (16%) and cooking characteristics could be attributed for extrusion process. Therefore, physical, mechanical and cooking characteristics of these rice-like grains can be modified by alteration of the different reconstitution parameters for specific quality requirement.

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