A feeding trial of 20 weeks duration was conducted using 240 point-of-lay Hy-line layers to study the nutritive value of diets containing low-energy agro-industrial by-products namely wheat bran, maize bran, rice bran, brewers' spent grains and cocoa pod husk on laying performance. The experimental diets were formulated to be iso-caloric and iso-nitrogenous. They contained an average of 16.3% crude protein and metabolisable energy of 10.38 MJ/kg. Each dietary treatment was replicated four times in a completely randomized design. The initial average live weight of the experimental birds was 1.75 kg. Feed and water were provided ad libitum. Among the production parameters studied were feed intake, body weight gain, feed conversion ratio, hen-day production, hen-housed egg production, egg weight, mortality, shell thickness, and Haugh unit. In addition, cost-benefit analysis was carried out to establish the economic feasibility of the experimental diets. With the exception of feed intake which showed significant response ($p < 0.05$) to dietary treatments, all the other production parameters showed a non significant positive response ($p > 0.05$). Cost per kilogram diet was reduced when agro-industrial by products were used. Dietary treatment T2 supported the best egg production with a net revenue of GH¢371.30. Seasonal increases in the prices of conventional feedstuffs like maize and fishmeal would make the use of agro-industrial by-products in poultry diets even more attractive. Key words: Feed package, low energy agro-industrial by-product, layer hens, performance.