

Abstract

Inadequacy of high quality and reasonably priced poultry feeds constitute major challenges to the development of a vibrant poultry industry. Maize and its by-products are the main energy sources used in the manufacture of commercial poultry diets. Maize has an energy content of 3550 ME kcal/kg compared to the more abundant broken rice (BR), fine bran (FB) and coarse rice with 2980, 2990 and 2650 ME kcal/kg respectively. Maize, the staple food for most Kenyans is expensive and only limited quantities are available for feed manufacturing, hence the need to explore cheap alternative energy sources. BR and FB are produced by the multi-step rice milling process, while the single step milling process leads to the production of a single combined byproduct (SCB), all studied in this research. One hundred and forty ISA brown layer chickens were distributed to five treatments in a completely randomized design. They were housed in battery cages at the University of Nairobi Poultry Unit from onset of lay to the peak of the laying cycle. Three test diets containing rice by products and two control diets constituted by a commercial layer mash and a maize soya bean basal diet were evaluated. The test diets contained 60% BR during the first eight weeks and 40% over the subsequent eight week period; SCB graded at 0, 5 and 10 %, while FB was fixed at 20%. Performance of birds on the diets containing 40 % BR and graded with 5 and 10% SCB were significantly ($P < 0.05$) higher than those on the two control diets (except for feed efficiency). Gross margins for birds on the two test diets were higher by 39 shillings per bird than those on the control diets. Substitution of maize with the rice-milling by-products up to 65 % was observed to be technically feasible and profitable.