Effects of Banana Peels on Chicken Weight Gain and Egg Production in the Urban and Peri-Urban Areas of Aksum City, Ethiopia

Araya, H.G.*; Gebrekristos S.G; Oliver W.V.

*Corresponding Author, Department Land Resource Management and Agricultural Technology, University of Nairobi, P.O. Box 29053, Nairobi, Kenya. email: hailish746990@gmail.com

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Introduction
Egg and meat production microenterprise is steadily growing due to its low initial investment and ready market in urban and peri-urban areas. However, cost of production is high due to the rising cost of corn, the main feed ingredient in poultry rations. Using banana peels, which forms a great proportion of city waste in Ethiopia, is seen as a way of not only reducing the city waste, but also as an alternative low-cost feed supplement that could help enhance egg production by small-holder farmers.

Methods
Rations were formulated using different proportions of ground banana peels powder mixed with a pre-formulated feed. Banana peels were collected from Aksum town, sundried, ground and mixed with wheat bran (8%), middling (8%), meat and bone meal (8%), molasses (2%), protein sources (15%), minerals (8%) to form 5 treatment diets containing 0%, 13%, 26%, 39% and 52% banana peel powder (Figure 1).

Experimental design
100 Bovans brown chickens of 5 months age were classified into four blocks based on their weight category and randomly allocated to the 5 treatments, replicated 5 times in a RCBD cage battery system. The birds were weighed before and then after every fortnight for 6 weeks, while egg production was recorded daily.

Comparative cost saving analysis
Cost of feed per weight gain (kg) was calculated by multiplying the cost with feed conversion ratio (Table). The cost of feed per egg was calculated through dividing the total number of experimental days (45) by the total number of eggs obtained within the experimental period multiplied by cost of daily feed intake. The feed cost savings was obtained by subtracting supplementation by banana peels from costs without being supplemented (initial costs) multiplied by 100.

ANOVA was used to determine if there were significant differences in weight gain and egg production among the treatments. The means in weight gain and egg production were separated using LSD.

Results
Replacement of maize by banana peels up to a proportion of 25% did not affect the net weight gain and egg production significantly. Replacement of maize by banana peels exceeding 75% significantly reduced egg production

The results show that whereas weight gain and egg production declined with increase in proportion of banana peels powder in the diet of chickens, the feed ration with 13% banana peel (25% corn replacement) did not adversely affect weight gain, egg production, incurred lower cost per kg of weight gain and per egg produced

<table>
<thead>
<tr>
<th>Variable</th>
<th>Treatment</th>
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<tr>
<td>Weight gain (g)</td>
<td>T1: 1204&lt;sup&gt;b&lt;/sup&gt;, T2: 1189&lt;sup&gt;b&lt;/sup&gt;, T3: 800&lt;sup&gt;a&lt;/sup&gt;, T4: 750&lt;sup&gt;a&lt;/sup&gt;, T5: 680&lt;sup&gt;a&lt;/sup&gt;±50.6</td>
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<tr>
<td>Egg production (No)</td>
<td>T1: 36&lt;sup&gt;c&lt;/sup&gt;, T2: 32&lt;sup&gt;c&lt;/sup&gt;, T3: 26&lt;sup&gt;b&lt;/sup&gt;, T4: 18&lt;sup&gt;a&lt;/sup&gt;, T5: 10&lt;sup&gt;a&lt;/sup&gt;±2.2</td>
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<tr>
<td>Feed cost savings (%)</td>
<td>T1: 5.84&lt;sup&gt;c&lt;/sup&gt;, T2: 8.11&lt;sup&gt;c&lt;/sup&gt;, T3: 16.32&lt;sup&gt;b&lt;/sup&gt;, T4: 26.6&lt;sup&gt;a&lt;/sup&gt;±0.089</td>
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*Row treatment means with different superscript are significantly different (P<0.05)

Take-Home Message
We conclude that banana peels powder can replace up to 25% of corn in chicken diet without causing adverse effects on their performance