

High Quality Low Cost Feed Rations for Laying Chickens

Innocent Kariuki^{1*}, KeeJong Kim², Soon Sung Hong³, Jaesu Lee³, Kyung-Tai Lee³,
John Mugambi⁴ and Moses Lang'at¹

¹KALRO-Food Crops Research Centre – Muguga, P.O. Box 30148-00100, Nairobi, Kenya

²KOPIA-Kenya Centre, P.O. Box 13987-00800, Nairobi, Kenya

³KOPIA, Technical Cooperation Bureau, RDA, Jeonju, 54875, Korea

⁴KALRO-Headquarters, P.O. Box 57811-00200, Nairobi, Kenya

*Corresponding author; (Phone) +254721422978, (E-mail) iw kariuki2002@gmail.com

산란계를 위한 고품질 저비용 사료 개발

이노센트 카리우키^{1*}, 김기종², 홍순성³, 이재수³, 이경태³, 존 무감비⁴ 모지스 랑남¹

¹KALRO 식량작물 연구 센터

²KOPIA 케냐센터

³농촌진흥청 국외농업기술과

⁴KALRO 본부

Abstract

In the Kenyan poultry industry, domestic chicken comprise 98% of the 32 million birds. Furthermore, indigenous chicken are 76% of the total chicken population. Chicken are raised under free range, semi-intensive and intensive production systems. Although requiring higher capital investment, intensive production systems guarantee the highest returns among the three chicken production systems. However, poor nutrition and feeding is a major factor that contributes to the low growth rate and egg production in chickens in all the three production systems.

The broad objective was to mix and test high quality and low cost feed rations A and B since feeds constitute 80% of total operational costs in commercial chicken production. On-farm studies under intensive production systems showed that, the laying percentage was 76.3% when hens were fed on Ration A compared to 53.5% when fed on commercial layers feeds. Likewise, the laying percentage was 71.4% when hens were fed on Ration B compared to 49.0% when fed on commercial layers feeds. Rations A and B should be promoted as high quality low cost rations for laying chickens. The choice of which ration to mix would depend on the availability of the feed ingredients.

1. Introduction

In the Kenyan poultry industry, domestic chicken comprise 98% of the 32 million birds. Furthermore, indigenous chicken are 76% of the total chicken population (Kingoriet *al.*, 2010).

Chicken are raised under free range, semi-intensive and intensive production systems. Although requiring higher capital investment, intensive production systems guarantee the highest returns among the three production systems.

However, poor nutrition and feeding is a major factor

that contributes to the low growth rate and egg production in chickens in all three production systems.

2. Broad Objective

To mix and test high quality and low cost feeds since feeds constitute 80% of total operational costs in commercial chicken production.

3. Materials and Methods

▪The type and amount of Ration A or B to mix was decided during the on-farm studies.

- The required high quality ingredients were acquired (at lowest cost).
- The required ingredients were weighed exactly according to the proportions shown in the formulation (Table 1).
- The ingredients were mixed to make rations (Figure 1).
- The expected chemical composition of the mixed rations compared to KEBS (2014) standards is shown in Table 2.

[Table 1] Feedrations**for laying chickens

Ingredient	Ration A	Ration B
Maize (Ground)	59.0	39.0
Wheat bran	0	5.0
Maize germ	0	20.0
Sunflower seed cake	5.0	5.0
Soya bean meal	20.0	15.0
Fish meal (Omena)	5.0	5.0
Limestone	9.0	9.0
Dicalcium phosphate	1.0	1.0
Iodized salt	0.35	0.35
Vitamin/Mineral premix (for layers)	0.25	0.25
DL-Methionine	0.05	0.05
L-Lysine HCl	0.10	0.10
Toxin binder	0.25	0.25
Total Quantities (Kg)	100.00	100.00

**Cost 33% cheaper than commercial layers feed

Table 2. Chemical composition of Rations A and B compared to Commercial layers feed as per KEBS (2014) standards

Feed	Ratio A	Ratio B	Commercial layers feed (KEBS, 2014)
Metabolizable Energy (Kcal/kg)	2,805	2,671	2,600 minimum
Crude Protein (%)	17.2	17.4	15.0 minimum
Calcium (%)	3.58	3.58	3.50 minimum
Available Phosphorous (%)	0.46	0.54	0.40 minimum
Crude Fibre (%)	4.73	5.53	7.50 maximum
Lysine (%)	1.04	1.00	0.69 minimum
Methionine (%)	0.39	0.38	0.30 minimum



[Fig. 1] Figure 1. Mixing ingredients using hands and shovels to make rations

4. Results and Conclusion

On-farm studies under intensive production systems showed that, the laying percentage was 76.3% when hens were fed on Ration A compared to 53.5% when fed on commercial layers feeds. Likewise, the laying percentage was 71.4% when hens were fed on Ration B compared to 49.0% when fed on commercial layers feeds. Rations A and B should be promoted as high quality low cost rations for laying chickens. The choice of which ration to mix would mainly depend on the availability of the feed ingredients.

4. References

Kenya Bureau of Standards [KEBS] (2014). Compounded poultry feeds – Specification. Kenya Standard KS 61:2009 (ICS 65.120).

Kingori, A.M., Tuitoek, J.K., Muiruri, H.K. and Wachira, A.M. (2010). Effect of Dietary Crude Protein Levels on Egg Production, Hatchability and Post-Hatch Offspring Performance of Indigenous Chickens. *International Journal of Poultry Science* 9 (4): 324-329.

6. Acknowledgment

This is an output of the KALRO/KOPIA project: “Demonstration and Promotion of Feeds for Enhancing Indigenous Chicken Productivity under Semi-intensive/Intensive Production Systems” through financial support of the Rural Development Administration (RDA), Republic of South Korea.